1997 Comprehensive Ground Water Monitoring Evaluation (CME) Philadelphia Coke Company City of Philadelphia, Philadelphia County

Pa. D.E.P., Southeast Regional Office Waste Management Program Suite 6010 Lee Park 555 North Lane Conshohocken, PA 19428

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Facility Location:

The former Philadelphia Coke Company site is located on Richmond Street, in the City of Philadelphia, Philadelphia County. A facility location map is provided as Figure 1. This map is excerpted from the U.S. Geological Survey 7.5 Minute Topographic Series, Frankford Quadrangle.

Narrative:

The former Philadelphia Coke Company site was the subject of RCRA CME inspection in February of 1997. Contaminants of concern historically associated with this closed coal tar decanting operation include Trichloroethene, Tetrachloroethene, and 1-2 Dichloroethene.

Ground water monitoring continues at this facility on a quarterly basis

CME Worksheet:

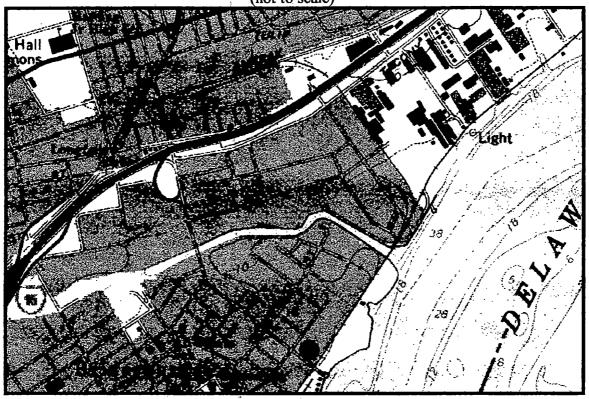
A completed Comprehensive Ground Water Monitoring Evaluation Worksheet is provided as Appendix A.

Analytical Results:

Analytical results for ground water samples collected in 1997 are provided as **Appendix B**. This includes results for analyses of samples collected and analyzed by the facility operator and also by the Department, during a "split" sampling event.

Figure I (Facility Location Map)

Philadelphia Coke Company City of Philadelphia, Philadelphia County (not to scale)



Excerpted From:

U.S. Geological Survey 7.5 Minute Topographic Series, Frankford Quadrangle (large shaded circle marks approximate location of facility)

Appendix A (Comprehensive Ground Water Monitoring Evaluation Worksheet)

APPENDIX A

COMPREHENSIVE GROUND-WATER MONITORIN EVALUATION WORKSHEET

The following worksheets have been designed to assist the enforcement officer/technical reviewer in evaluating the ground-water monitoring system an owner/op uses to collect and analyze samples of ground water. The focus of the worksheets technical adequacy as it relates to obtaining and analyzing representative sample ground water. The basis of the worksheets is the final RCRA Ground Water Mon Technical Enforcement Guidance Document which describes in detail the aspects ground-water monitoring which EPA deems essential to meet the goals of RCRA. Appendix A is not a regulatory checklist. Specific technical deficiencies in the monitoring system can, however, be related to the regulations as illustrated in Figure taken from the RCRA Ground-Water Monitoring Compliance Order Guide (COG (included at the end of the appendix). The enforcement officer, in developing an enforcement order, should relate the technical assessment from the worksheets to regulations using Figure 4.3 from the COG as a guide.

Comprehensive Ground-Water Monitoring Evaluation	T
L Office Evaluation Technical Evaluation of the Design of the Ground-Water Monitoring System	1
A. Review of Relevant Documents	
1. What documents were obtained prior to conducting the inspection:	
a. RCRA Part A permit addication?	
b. RCRA Part B permit application?	十
c. Correspondence between the owner/operator and appropriate agencies or	t
d. Previously conducted facility inspection reports?	╀
e. Facility's contractor (Coops)	₽-
f. Regional hydrogeologie, analogie, or soil reports?	L
The facility's Committee of the second	
g. The facility's Sampling and Analysis Plant	Γ
h. Ground-water Assessment Program Outline (or Plan, if the acility is in assessment monitoring)?	T
i. Other (specify)	┢
	ł

B. Evaluation of the Owner/Operator's Hydrogeologic Assessment	
1. Did the owner/operator use the following direct techniques in the hydrogeologic	
assessment	
a. Logs of the soil bonngs/rock conngs (documented by a professional geologist,	
soil tentist, or geotechnical engineer)?	Y
b. Materiais tests (e.g., grain size analyses, standard penetration tests, etc.)?	-
c. Piezometer installation for water level measurments at different depths?d. Slug tests?	N
e. Pump tests?	N
	N
!. Geochemical analyses of soil samples?	N
g. Other (specify) (e.g., hydrochemical diagrams and wash analysis)	N
2 Pid the owner/onesses was the fallowing to	1
2. Did the owner/operator use the following indirect technique to supplement direct techniques data:	
weiningoes data.	
a. Geophysical well logs?	
b. Tracer studies?	N
c. Resistivity and/or electromagnetic conductance?	N
d. Seismic Survey?	N.
e. Hydraulic conductivity measurements of cores?	N
f. Aerial photography?	N
g. Ground penetrating radar?	N
h. Other (specify)	N
an outer (opening)	N
Did the owner/onerses document and amount	
B. Did the owner/operator document and present the raw data from the site hydrogeologic assessment?	
a) and good office assessment?	Y
Did the owner/operator downers and a did to the owners are a did to the owners and a did to the owners are a did to the owners	
Did the owner/operator document methods (criteria) used to correlate and analyze the information?	
and mancel:	Y
The owner/one-the second district the second d	
The owner/operator prepare the following:	-
a. Narrative description of geology?	
b. Geologic cross sections?	Y
c. Geologic and soil maps?	Y Y
d. Boring/coring logs?	Y
e. Structure contour maps of the differing water bearing zones and confining layer?	Y
f. Narrative description and calculation of ground-water flows?	Υ
	Y

g. Water table/potentiometric map?	Y/N
h. Hydrologic cross sections?	Y
6. Did the owner/operator obtain a regional map of the area and delineate the facility?	
· · · · · · · · · · · · · · · · · · ·	
If yes, does this map illustrate:	
a. Surficial geology features?	<i>:</i>
b. Streams, rivers, lakes, or wetlands near the facility?	N N
c. Discharging or recharging wells near the facility?	
7. Did the owner/operator obtain a regional hydrogeologic map?	N
	Y
If yes, does this hydrogeologic map indicate:	
a. Major areas of recharge/discharge?	Y
b. Regional ground-water flow direction?	Y
c. Potentiometric contours which are consistent with observed water level	1
elevations?	Y
8. Did the owner/operator prepare a facility site map? If yes, does the site map show:	Ÿ
a. Regulated units of the facility (e.g., landfill areas, impoundments)?	Y
b. Any seeps, springs, streams, ponds, or wetlands?	
c. Locution of monitoring wells, soil borings, or test pits?	· · ·
d. How many regulated units does the facility have?	Y
If more than one regulated unit then,	+
Does the waste management area encompass all regulated units?	Y
• Is a waste management area delineated for each regulated unit?	Y
. Characterization of Subsurface Geology of Site	·
1. Soil boring/test pit program:	_
a. West the still borings/test pits performed under the supervision of a qualified professional and a still borings/test pits performed under the supervision of a qualified	Y
b. Did the owner/operator provide documentation for selecting the spacing for	12"
borings?	Y
c. Were the borings driffer the depth of the first confining unit below the	
uppermost zone of saturation or ten feet into bedrock?	Y
d. Indicate the method(s) of drilling:	
	1
	?

Auger (hollow or solid stem)	Y/
Mud rotary	
Reverse rotary	
Cable tool	
Jetong	
Other (specify)	
e. Were continuous sample corings taken?	
f. How were the samples obtained (checked method(s))	N
• Split spoon X • Shelby tube, or similar	
• Rock coring	
• Ditch sampling	
• Other (explain)	
8. Were the continuous seconds	1
g. Were the continuous sample corings logged by a qualified professional in geology?	
h. Does the field barier leaders and the leaders and the leaders are the leaders and the leaders are the leade	N/A
h. Does the field boring log include the following information: • Hole name/number?	
• Date started and finished?	Y
• Driller's name?	Y
	Y
Hole location (i.e., map and elevation)? Drill ris new and his female in the second his	Y
• Drill rig type and bit/auger size?	7
• Gross petrography (e.g., rock type) of each geologic unit?	Y
• Gross mineralogy of each geologic unit?	Y
Gross structural interpretation of each geologic unit and structural features (e.g., fractures, going managed activities)	
to B. aut in C., gouge material, solution channels, harried amount in	Ī
occurred of General Marchally	Y
Development of soil zones and vertical extent and description of soil type? Depth of water begins unit() and in the soil type?	+
of water ocaling unit(3) and vertical extent of each?	· ·
• Depth and reason for termination of borehole?	Y
Depth and location of any contaminant encountered in borehole?	Y
• Sample location/number?	Y
Percent sample recovery? Name in description	
• Narrative descriptions of:	N
- Country of the coun	Y
—Drilling observations?	Y
i. Were the following analytical tests performed on the core samples:	
westeratory (e.g. microscopic tests and x-ray diffraction)?	
· Pentographic analysis:	N
degree of crystallinity and comentation of matrix?	N
—degree of sorting, size fraction (i.e., sieving), textural variations? —rock type(s)?	
	N N

enil non2	YIN
—soil type?	H
-approximate bulk geochemistry?	H
-existence of microstructures that may effect or indicate fluid flow?	;;
• Falling head tests?	?1
• Static head tests?	· ii
Settling measurements?	N
Centrifuge tests?	И
• Column drawings?	17
D. Verification of Subsurface Geological Data	
1. Has the owner/operator used indirect geophysical methods to supplement geological conditions between borehole locations?	И
2. Do the number of borings and analytical data indicate that the confining layer displays a low enough permeability to impede the migration of contaminants to any stratigraphically low water-bearing units?	Y
3. Is the confining layer laterally continuous across the entire site?	?
4. Did the owner/operator consider the chemical compatibility of the size-specific waste types and the geologic materials of the confining layer?	?
5. Did the geologic assessment address or provide means for resolution of any information gaps of geologic data?	Ÿ
6. Do the laboratory data corroborate the field data for petrography?	N/A
7. Do the laboratory data corroborate the field data for mineralogy and subsurface geochemistry?	N/A
Presentation of Geologic Data	
1. Did the owner/operator present geologic cross sections of the site?	¥
2. Do cross sections:	
a. identify the types and characteristics of the geologic materials present?	7
b. define the contact zones between different geologic materials?	;
c. note the zones of high permeability or fracture?	i
c. now are some of man between that of tractale.	

	Y/N
• location of borehole?	v
• depth of termination?	
· location of screen (if applicable)?	
· depth of zone(s) of saturation?	
backfill procedure?	
3. Did the owner/operator provide a topographic map which was constructed by a licensed surveyor?	Y
a. contours at a maximum interval of two-feet?	y
b. locations and illustrations of man-thade features (e.g., parking lots, factory	
buildings, drainage disches, storm drain, pipelines, etc.)?	
c. descriptions of nearby water bodies?	Y
d_descriptions of off-site wells?	N
e. site boundaries?	
f. individual RCRA units?	Ϋ́
g. delineation of the waste management area(s)?	Y
h. well and boring locations?	Y
5. Did the owner/operator provide an aerial photograph depicting the site and adjacent off-site features?	Y
6. Does the photograph clearly show surface water bodies, adjacent municipalities, and residences and are these clearly labelled?	N
F. Identification of Ground-Water Flowpaths 1. Ground-water flow direction	·
a. Was the well casing height measured by a licensed surveyor to the nearest 0.01 [cet?]	¥
	γ
c. Were the well water land measurements taken in the nearest 0.01 feet?	Y
d. Were the well water levels allowed to stabilize after construction and	Y
development for a minimum of 24 hours prior to measurements?	
e. Was the water level information obtained from (check appropriate one):	/
• multiple piezometers placed in single borehole?	,
• vertically nested piezometers in closely spaced separate	
• boreholes?	
• monitoring wells?	1

	Y/N
f. Did the owner/operator provide construction details for the piezometers?	Y
g. How were the stane water levels measured (check method(s)).	
• Electric water sounder	
· Wetted tape	
• Air line	
Other (explain)	
h. Was the well water level measured in wells with equivalent screened intervals at	
an equivalent depth below the saturated zone?	N
i. Has the owner/operator provided a site water table (potentiometric) contour map?	
If yes,	
Do the potentiometric contours appear logical and accurate based on	ľ
topography and presented data? (Consult water level data)	Y
• Are ground-water flow-lines indicated?	Y
· Are static water levels showa?	Y
Can hydraulic gradients be estimated?	Y
j. Did the owner/operator develop hydrologic cross sections of the vertical flow	<u> </u>
component across the site using measurements from all wells?	N
k. Do the owner/operator's flow nets include:	
• piezometer locations?	Y
• depth of screening?	γ
width of screening?	Y
 measurements of water levels from all wells and piezometers? 	Y
2. Seasonal and temporal fluctuations in ground-water	
a. Do fluctuations in static water levels occur? If yes, are the fluctuations caused by any of the following:	Y
	I
—Off-site well pumping	?
—Tidal processes or other intermittent natural	v
variations (e.g., rhyer stage, etc.)	Y
-Os-site well pumping	N
-Off-size, on-size construction or changing land use patterns	Υ.
-Dece Maria de la companya del companya del companya de la company	N
	â
-Other (special)	-
b. Has the owner/operator documented sources and patterns that contribute to or	
affect the ground-water patterns below the waste management?	?
c. Do water level fluctuations alter the general ground-water gradients and flow	
directions?	N
d. Based on water level data, do any head differentials occur that may indicate a	
vertical flow component in the saturated zone?	?
	-

.. :

	Y/N
e. Did the owner/operator implement means for gauging long term effects on water	
movement that may result from on-site or off-site construction or changes in	
land-use patterns?	N N
3. Hydraulic conductivity	
a. How were hydraulic conductivities of the subsurface materials determined?	?
• Single-well tests (slug tests)?	
Mulaple-well tests (pump tests)	
• Other (specify)	 -
b. If single-well tests were conducted, was it done by:	 -
Adding or removing a known volume of water?	
Pressurizing well casing?	
c. If single well tests were conducted in a highly permeable formation, were	+
pressure transducers and high-speed recording equipment used to record the	
rapidly changing water levels?	_
d. Since single well tests only measure hydraulic conductivity in a limited area,	
were enough tests run to ensure a representative measure of conductivity in each	1
hydrogeologic unit?	-
e. Is the owner/operator's slug test data (if applicable) consistent with existing	
geologic information (e.g., boring logs)?	-
f. Were other hydraulic conductivity properties determined?	
g. If yes, provide any of the following data, if available:	
Transmissivity	
Storage coefficient	
• Leakage	
Permeability	
• Porosity	-
Specific capacity	
Other (specify)	
4. Identification of the uppermost aquifer	
a. Has the extended the unpermost separated zone (aguifur) in the facility ages than	, , , , , , , , , , , , , , , , , , ,
a. Has the entered the uppermost esturated zone (aquifer) in the facility area been defined?	
• Are soil boring/test pit logs included?	Y
• Are geologic cross-sections included?	Y
b. Is there evidence of confining (competent, unifractured, continuous, and low	
permeability) layers beneath the site? If yes,	ÿ
• how was continuity demonstrated? SUBSURFACE BORINGS	
c. What is hydraulic conductivity of the confining unit (if present)? CM/Sec How	
was it determined?	?

	IVA
d. Does potential for other hydraulic communication exist (e.g., lateral incommutity	
between geologic units, facies changes, fracture zones, cross cutting structures,	
or chemical corrosion/alteration of geologic units by leachage? If yes or no, what	
is the rationale?	
G. Office Evaluation of the Facility's Ground-Water Monitoring System— Monitoring Well Design and Construction:	
These questions should be answered for each different well design present at the	
facility.	
1. Drilling Methods	
= 1. Drining methods = 2. What drilling method was used for the well?	
** **	?
	•
•	
• Mud rotary • Air rotary	
•	
• Reverse rotary	
• Jetting	
• Air drill w/ casing hammer	
• Other (specify)	
b. Were any cutting fluids (including water) or additives used during drilling? If	
yes, specify:	•
• Type of drilling fluid	
• Source of water used	
• Foam	?
• Polymer	
• Other	
c. Was the cytting fluid, or additive, identified	?
d. Was the defiling agriculant states cleaned pair to deliting to well?	7
e. Was compressed air used during drilling? If yes,	
• was the air filtered to remine oil?	?
f. Did the owner/operator document procedure for establishing the potentiometric	
surface? If yes,	
• how was the location established? STATIC H ₂ O LEVELS	Y
g. Formation samples	
•	i

· Were formation samples collected initially during drilling?	Y/1
· Mere any cores taken continuous?	Y
· If not, at what interval were samples taken?	W/
· How were the samples obtained?	?
XSplit spoon	
—Shelby tube	'
—Core drill	
—Other (specify)	
	i
 Identify if any physical and/or chemical tests were performed on the formation samples (specify) 	
roungdon samples (specify)	
:	,
	Ī
. Monitoring Well Construction Materials	
. Moundails wen Constitution Matchails	i i
a Identify accompanies manufacts of	
a. Identify construction materials (by number) and diameters (ID/OD)	
Material Diameter	
• Primary Casing PVC / "	l
• Secondary or outside casing STEEL 8 " (doubleconstruction)	İ
• Screen PVC 4 "	
b. How are the sections of casing and screen connected? • Pipe sections threaded	
	?
Couplings (friction) with adhesive or solvent Couplings (friction) with aminor or solvent	
Couplings (friction) with retainer screws Other (specify)	
c. Were the materials steam-cleaned prior to installation?	
• If no, how water the materials cleaned?	?
Well Intake Design and Well Development	4.40
west make Design and Well Development	
a. Was a well intake agree increlled?	
	· Y
10 - 20 1	A STATE OF THE STA
• Is the screen manufactured?	
b. Was a filter pack installed?	Y
What kind of filter pack was employed?	Υ
THE AUGUST PACK WAS employed?	1
SAND	£ .
/ SAND	
• Is the filter pack compatible with formation materials?	Y
/ SAND	Ÿ

· · · · · · · · · · · · · · · · · · ·	1 1/14
What are the dimensions of the filter pack?	
· Has a turbidity measurement of the well water ever been made?	Y
Have the filter pack and screen been designed for the insitu materials?	
	Y
c. Well development	
Was the well developed?	Y
· What technique was used for well development?	
—Surge block	
-Bailer	
Air surging	?
Water pumping	1
—Other (specify)	1 To 1
4. Annular Space Seals	
a. What is the annular space in the saturated zone directly above the filter pack	
filled with:	ľ
-Sodium bentonite (specify type and grit)	?
—Cement (specify neat or concrete)	1
—Other (specify)	1
b. Was the seal installed by:	
—Dropping material down the hole and tamping	1
-Dropping material down the inside of hollow-stem auger	į
—Tremie pipe method	?
-Other (specify)	[
c. Was a different seal used in the unsaturated zone? If yes,	
• Was this seal made with?	?
-Sodium bentonite (specify type and grit)	
-Cement (specify nest or concrete)- Other (specify)	
• Was this seal installed by	
-Dropping material down the hole and tamping	
Drogging meterial down the Inside of hollow stem suger	i i
-Other (specific)	1 1
d. Is the upper portion of the borehole sealed with a concrete cap to prevent	
infiltration from the surface?	Y
e. Is the well fitted with an above-ground protectivedevice and bumper guards?	Y
. Has the protective cover been installed with locks to prevent tampering?	
	Y

Placement of Downgradient Detection Monitoring Wells a. Are the ground-water monitoring wells or clusters located immediately adjacent to the waste management area? b. How far apart are the detection monitoring wells? c. Does the owner/operator provide a ranonale for thelocation of each monitoring well or cluster? d. Does the owner/operator identified the well screenlengths of each monitoring well or clusters? e. Does the owner/operator provide an explanation for the well screen lengths of each monitoring well or clusters? f. Do the actual locations of monitoring wells orclusters correspond to those identified by the owner/operator? Placement of Upgradient Monitoring Wells a. Has the owner/operator documented the location of each upgradient monitoring well or cluster? b. Does the owner/operator provide an explanation for the location(s) of the upgradient monitoring wells? c. What length screen has the owner/operator employed in the background monitoring well(s)? 10 - 20 d. Does the owner/operator provide an explanation for the screen length(s) y. c. Does the actual location of each background monitoring well or cluster correspond to that identified by the owner/operator? Office Evaluation of the Facility's Assessment Monitoring Program Does the assessment plan specify: The number of the placement and identify the basis that will be used to select subsequent sampling locations and depths in later assessment phases? Y. Does the list of monitoring parameters include all hazardous waste constituents.	H Evolution of the Print	Y/1
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Does the list of monitoring parameters include all hazardous waste constituents rom the facility?	and deputs in sales assessment phases?	Y
rom the facility?	Does the list of monitoring parameters include all hazardous waste constituent	-
Y	from the facility?	
		Y
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 a. Does the water quality parameter list include other important indicators not classified as hazardous waste constituents? b. Does the owner operator provide documentation for he listed wastes which are not included? 3. Does the owner/operator's assessment plan specify the procedures to be used to 	ï
not included?	1
3. Does the owner/operator's assessment plan energy the procedure.	
determine the rate of constituent migration in the ground-water?	
4. Has the owner/operator specified a schedule of implementation in the assessment	Ÿ
plan?	Y
5. Have the assessment monitoring objectives been clearly defined in the assessment plan?	y zé Y
a. Does the plan include analysis and/or re-evaluation to determine if significant — contamination has occurred any of the detection monitoring wells?	Y.
b. Does the plan provide for a comprehensive program of investigation to fully characterize the rate and extent of contaminant migration from the facility?	y ·
c. Does the plan call for determining the concentrations of hazardous wastes and hazardous waste constituents in the ground water?	Y
d. Does the plan employ a quarterly monitoring program?	
6. Does the assessment plan identify the investigatory methods that will be used in the assessment phase?	Y Y
a. Is the role of each method in the evaluation fully described?	Y
b. Does the plan provide sufficient descriptions of the direct methods to be used?	Y
c. Does the plan provide sufficient descriptions of the indirect methods to be used?	N/A
d. Will the method contribute to the further characterization of the contaminant movement?	?
. Are the investigatory techniques utilized in the assessment program based on direct methods?	Y
a. Does the assessment approach incorporate indirect methods to further support direct methods?	
b. Will the planted methods called for in the assessment approach ultimately meet performance standards for assessment monitoring?	- И
c. Are the procedures well defined?	Y
d. Does the approach provide for monitoring wells similar in design and	Y
construction as the detectionmonitoring wells?	Y

	Y/N
e. Does the approach employ taking samples during drilling or collecting core samples for further analysis?	Y
8. Are the indirect methods to be used based on reliable and accepted geophysical techniques?	N/A
a. Are they capable of detecting subsurface changes resulting from contaminant migration at the site?	_
b. Is the measurement at an appropriate level of sensitivity to detect ground-water quality changes at the site?	_
c. Is the method appropriate considering the nature of the subsurface materials?	
d. Does the approach consider the limitations of these methods?	
e. Will the extent of contamination and constituent concentration be based on direct methods and sound engineering judgment? (Using indirect methods to further substantiate the findings.)	-
Does the assessment approach incorporate any mathe-matical modeling to predict contaminant movement?	-
a. Will site specific measurements be utilized toaccurately portray the subsurface? b. Will the derived data be reliable?	-
c. Have the assumptions been identified?	-
d. Have the physical and chemical properties of the site-specific wastes and	
hazardous waste constituentsbeen identified?	_
J. Conclusions	
1. Subsurface geology	·
a. Has sufficient data been collected to adequately define petrography and	
petrographic variation?	Y
b. Has the subsurface geochemistry been a quately defined?	?
c. Will be horingent to program adequate to define the arrange project variation? d. Will be horingent to program adequate to define the arrange in in.	?
interprediction of the data?	Y
e. Does the geologic assessment address or provide means to resolve any information gaps?	. ε γ
2. Ground-water flowpaths	Y
a. Did the owner/operator adequately establish the hori-zontal and vertical components of ground-water flow?	Y

	Y/N
b. Were appropriate methods used to establish ground-water flowpaths?	Y
c. Did the owner/operator provide accurate documentation?	Y
d. Are the potentiometric surface measurements valid?	٧
e. Did the owner/operator adequately consider the seasonal and temporal effects on the ground-water?	
	Y
f. Were sufficient hydraulic conductivity tests performed to document lateral and	
vertical variationin hydraulic conductivity in the entire hydrogeologic subsurface below the site?	
3. Uppermost Aquifer a. Did the owner/operator adequately define the upper-most aquifer?	Y
a. Do the design and construction of the owner/operator's ground-water monitoring wells permit depth discrete ground-water samples to be taken?	N
b. Are the samples representative of ground-water quality?	
c. Are the ground-water monitoring wells structurally stable?	Y
d. Does the ground-water monitoring well's design and construction permit an	Y
accurate assessment of aquifer characteristics?	Y
Detection Monitoring	
a. Downgradient Wells	
• Do the location, and screen lengths of the ground-water monitoring wells or	
clusters in the detection monitoring system allow the immediate detection of a	Y
management area to the uppermost aquifer?	
b. Upgradient Wells	
• Do the location and screen lengths of the upgradient (background) ground- water anonitoring wells ensure the casability of collecting swand-water samples representative of upgradient (background) ground-water quality including any ambient heterogenous chemical characteristics?	2
Assessment Monitoring a. Has the owner/operator adequately characterized site hydrogeology to defirmine contaminant migration?	ï
b. Is the detection monitoring system adequately designed and constructed to immediately detect any contaminant release?	y ·

93.

	YN
c. Are the procedures used to make a first determination of contamination adequate?	2
d Is the assessment plan adequate to detect, characterize, and track contaminant migration?	· ·
e. Will the assessment monitoring wells, given site hydrogeologic conditions,	
define the extent and concentration of contamination in the horizontal and vertical planes?	Y
f. Are the assessment monitoring wells adequately designed and constructed?	Y
g. Are the sampling and analysis procedures adequate to provide true measures of contamination?	Y
h. Do the procedures used for evaluation of assessment monitoring data result in	
determinations of the rate of migration, extent of migration, and hazardous constituest composition of the contaminant plume?	Y
i. Are the data collected at sufficient frequency and duration to adequately	
determine the fate of migration?	Y
j. Is the schedule of implémentation adequate?	Y
k. Is the owner/operator's assessment monitoring plan adequate?	Y
 If the owner/operator had to implement hisassessment monitoring plan, was it implemented satisfactorily? 	N/A
II. Field Evaluation A. Ground-Water Monitoring System 1. Are the numbers, depths, and locations of monitoring wells in agreement with those	Y
reported in the facility's monitoring plan? (See Section 3.2.3.)	
B. Monitoring Well Construction	
1. Identify construction material material dismeter	
a. Primary Casing 4" PVC b. Secondary or outside casing 8" STEEL	-
2. Is the upper portion of the borehole sealed with contest to prevent infiltration from the surface?	Y
3. Is the well fitted with an above-ground protective device?	Ү -
4. Is the protective cover fitted with locks to prevent tampering? If a facility utilizes more than a single well design, answer the above questions for each well design?	Υ

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	Y/N	; -
III. Review of Sample Collection Procedures		<u> </u>
A. Measurement of Well Depths /Elevation		
1. Are measurements of both depth to standing water and depth to the bottom of the well made?	Y	
2. Are measurements taken to the 0.01 feet?	Y	
3. What device is used?	-	7
4. Is there a reference point established by a licensed surveyor?	The Year	4
5. Is the measuring equipment properly cleaned betweenwil locations to prevent cross contamination?	Y	1
3. Detection of Immiscible Layers	 	1
1. Are procedures used which will detect light phase immiscible layers?	Y	
2. Are procedures used which will detect heavy phase immiscible layers?	н	-
Sampling of Immiscible Layers		-
1. Are the immiscible layers sampled separately prior so well evacuation?	N/A	
2. Do the procedures used minimize mixing with watersoluble phases?	N/A	
Well Execuation		
1. Are low yielding wells evacuated to dryness?	Y .	
. Are high years and execusion and at telest three casing volumes are removed?	Y	
What device is used to evacuate the wells? SUBMERSIBLE PUMP		
If any problems are encountered (e.g., equipmentmalfunction) are they noted in a field logbook?	Y	
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E. Sample Withdrawal	Y
The state of the s	·
1. For low yielding wells, are samples for plattles, pH, and oxidation/reduction potential drawn first after the well recovers?	Y
2. Are samples withdrawn with either flurocarbon/resins or stainless steel (316, 304 or 2205) sampling devices?	
3. Are sampling devices either bottom valve bailers or positive gas displacement - bladder pumps?	Y
4. If bailers are used, is fluorocarbon/resin coated wire, single strand stainless steel wire, or monofilament used to raise and lower the bailer?	N Y
5. If bladder pumps are used, are they operated in acontinuous manner to prevent —— acration of the sample?	ү
6. If bailers are used, are they lowered slowly to prevent degassing of the water?	Y
7. If bailers are used, are the contents transferred to the sample container in a way that minimizes agitation and aeration?	Y
8. Is care taken to avoid placing clean sampling equipment on the ground or other contaminated surfaces prior to insertion into the well?	Y
9. If dedicated sampling equipment is not used, is equipment disassembled and thoroughly cleaned between samples?	Y
O. If samples are for inorganic analysis, does the cleaning procedure include the following sequential stage: a. Dilute acid rinse (HNO or HC1)?11. If samples are for organic analysis, does the cleaning procedure include the following sequential steps: 1. If same acid rinse (HNO or HC1)?12.	?
following sequential steps:	
a. Nonphosphate detergent wash? b. Tap water time?	Y
c. Distilled/deionized water riste?	Ŷ
d. Acetone rinse?	Y
e. Pesticide-grade hexane rinse?	?
and thise;	

	YAN
12. Is sampling equipment thoroughly dry before use?	
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13. Are equipment blanks taken to ensure that sample cross-contamination has not occurred?	Y
14. If volatile samples are taken with a positive gas displacement bladder pump, are pumping rates below 100 ml/min?	?
In-situ or Field Analyses	·
1. Are the following labile (chemically unstable) parameters determined in the field:	Y
a. pH?	-
b. Temperature?	Y
c. Specific conductivity?	Y
d. Redox potential?	N/A
e. Chlorine?	N/A
f. Dissolved oxygen?	N/A
g. Turbidity?	N
h. Other (specify)	
. For in-situ determinations, are they made after well evacuation and sample removal?	N/A
. If sample is withdrawn from the well, is parameter measured from a split portion?	Y
. Is monitoring equipment calibrated according to mannufacturers' specifications and consistent with SW-846?	?
. Is the date, procedure, and maintenance for equipment calibration documented in the field logbook?	Υ.
Review of Sample Preservation and Hamilton Procedures Sample Containers	Y.
Are samples transferred from the sampling device directly to their compatible	•

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	Y/N
2. Are sample containers for metals (inorganics) analyses polyethylene with polypropylene caps?	Y
3. Are sample containers for organics analysis glass bottles with fluorocarbonresin-lined caps?	Y
4. If glass bottles are used for metals samples are the caps fluorocarbonresin-lined?	N/A
5. Are the sample containers for metal analyses cleanedusing these sequential steps:	
a. Nonphosphate detergent wash?	?
b. 1:1 nitric acid rinse?	9
c. Tap water rinse?	? ?
d. 1:1 hydrochloric acid rinse?	-
e. Tap water-rinse?	
f. Distilled/ceionized water rinse?	?
6. Are the sample containers for organic analyses cleaned using these sequential steps:	I
a. Nonphosphate detergent/hot water wash?	?
a. Nonphosphate detergent/hot water wash? b. Tap water rinse?	?
a. Nonphosphate detergent/hot water wash? b. Tap water rinse? c. Distilled/deionized water rinse?	?
a. Nonphosphate detergent/hot water wash? b. Tap water rinse? c. Distilled/deionized water rinse? d. Acetone rinse?	? ?
a. Nonphosphate detergent/hot water wash? b. Tap water rinse? c. Distilled/deionized water rinse? d. Acetone rinse? e. Pesticide-grade hexane rinse? /. Are trip blanks used for each sample container type to verify cleanliness?	?
a. Nonphosphate detergent/hot water wash? b. Tap water rinse? c. Distilled/deionized water rinse? d. Acetone rinse? e. Pesticide-grade bexane rinse? Are trip blanks used for each sample container type to verify cleanliness? Sample Preservation Procedures Are samples for the following analyses cooled to 4°C:	? ? ?
a. Nonphosphate detergent/hot water wash? b. Tap water rinse? c. Distilled/deionized water rinse? d. Acetone rinse? e. Pesticide-grade hexane rinse? Are trip blanks used for each sample container type to verify cleanliness? Sample Preservation Procedures	? ? ?
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a. Nonphosphate detergent/hot water wash? b. Tap water rinse? c. Distilled/deionized water rinse? d. Acetone rinse? e. Pesticide-grade bexane rinse? Are trip blanks used for each sample container type to verify cleanliness? Sample Preservation Procedures Are samples for the following analyses cooled to 4°C. a. To a.	? ? ?
a. Nonphosphate detergent/hot water wash? b. Tap water rinse? c. Distilled/deionized water rinse? d. Acetone rinse? e. Pesticide-grade hexane rinse? Are trip blanks used for each sample container type to verify cleanliness? Sample Preservation Procedures Are samples for the following analyses cooled to 4°C: a. Too. c. Chiefide? d. Phenois?	? ? ?
a. Nonphosphate detergent/hot water wash? b. Tap water rinse? c. Distilled/deionized water rinse? d. Acetone rinse? e. Pesticide-grade bexane rinse? Are trip blanks used for each sample container type to verify cleanliness? Sample Preservation Procedures Are samples for the following analyses cooled to 4°C. a. Too. c. Chorde? d. Phenois? e. Sulfase?	? ? ?
a. Nonphosphate detergent/hot water wash? b. Tap water rinse? c. Distilled/deionized water rinse? d. Acetone rinse? e. Pesticide-grade bexane rinse? Are trip blanks used for each sample container type to verify cleanliness? Sample Preservation Procedures Are samples for the following analyses cooled to 4°C: a. To 6. c. Chieriee? d. Phenols? e. Sulfate? f. Nitrate?	? ? ? ?
a. Nonphosphate detergent/hot water wash? b. Tap water rinse? c. Distilled/deionized water rinse? d. Acetone rinse? e. Pesticide-grade bexane rinse? Are trip blanks used for each sample container type to verify cleanliness? Sample Preservation Procedures Are samples for the following analyses cooled to 4°C: a. To a. c. Chiefide? d. Phenois? e. Sulfate? f. Nitrate? g. Coliform bacteria?	? ? ?
a. Nonphosphate detergent/hot water wash? b. Tap water rinse? c. Distilled/deionized water rinse? d. Acetone rinse? e. Pesticide-grade bexane rinse? Are trip blanks used for each sample container type to verify cleanliness? Sample Preservation Procedures Are samples for the following analyses cooled to 4°C a. TO 3. c. Chioride d. Phenois? e. Sulfate? f. Nitrate? g. Coliform bacteris? h. Cyanide?	? ? ? ?
a. Nonphosphate detergent/hot water wash? b. Tap water rinse? c. Distilled/deionized water rinse? d. Acetone rinse? e. Pesticide-grade bexane rinse? Are trip blanks used for each sample container type to verify cleanliness? Sample Preservation Procedures Are samples for the following analyses cooled to 4°C: a. To a. c. Chiefide? d. Phenois? e. Sulfate? f. Nitrate? g. Coliform bacteria?	? ? ? ?

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2. Are samples for the following analyses field acidified to pH <2 with HNO,:	Y/N
•	
i.iron?	Y
b. Manganese? c. Sodium?	
d. Total metals?	
e. Dissolved metals?	¥
f. Fluoride?	Y
g. Endrin?	Y
h. Lindane?	4/4
i. Methoxychlor?	b/A
j. Toxaphene?	N/A
k. 2,4, D?	H/A
L 2,4,5 TP Silvex?	N/A
m. Radium?	N/A
n. Gross alpha?	N/A
o. Gross beta?	N/A
a. Phenois?	
b. Oil and grease?	Y M/A
4. Is the sample for TOC analyses field acified to pH <2 with HCl?	
	H/A
4. Is the sample for TOC analyses field acified to pH <2 with HCl?	N/A ?
 4. Is the sample for TOC analyses field acified to pH <2 with HCl? 5. Is the sample for TOX analysis preserved with 1 ml of 1.1 M sodium sulfite? 	N/A ?
 4. Is the sample for TOC analyses field acified to pH <2 with HCl? 5. Is the sample for TOX analysis preserved with 1 ml of 1.1 M sodium sulfite? 6. Is the sample for cyanide analysis preserved with NaOH to pH >12? 	N/A ?
4. Is the sample for TOC analyses field acified to pH <2 with HCl? 5. Is the sample for TOX analysis preserved with 1 ml of 1.1 M sodium sulfite? 6. Is the sample for cyanide analysis preserved with NaOH to pH >12? 5. Special Handling Considerations	H/A ? N
 4. Is the sample for TOC analyses field acified to pH <2 with HCl? 5. Is the sample for TOX analysis preserved with 1 ml of 1.1 M sodium sulfite? 6. Is the sample for cyanide analysis preserved with NsOH to pH >12? 2. Special Handling Considerations 1. Are organic samples handled without filtering? 2. Are samples for volatile organics transferred to the appropriate vials an eliminate. 	H/A ? N
4. Is the sample for TOC analyses field acified to pH <2 with HCl? 5. Is the sample for TOX analysis preserved with 1 mi of 1.1 M sodium sulfite? 6. Is the sample for cyanide analysis preserved with NaOH to pH > 12? 2. Special Handling Considerations 1. Are organic samples handled without filtering? 2. Are samples for volatile organics transferred to the appropriate vials to eliminate headspace over the sample?	H/A ? N ?
4. Is the sample for TOC analyses field acified to pH <2 with HCl? 5. Is the sample for TOX analysis preserved with 1 ml of 1.1 M sodium sulfite? 6. Is the sample for cyanide analysis preserved with NaOH to pH >12? 2. Special Handling Considerations 1. Are organic samples handled without filtering? 2. Are samples for volatile organics transferred to the appropriate vials to eliminate headspace over the sample? 3. Are samples for metal analysis split into two portions?	N ?

V Deview of Chair of Council D	Y/N
V. Review of Chain-of-Custody Procedures	
A. Sample Labels	
	Ÿ
.1. Are sample labels used?	,
2. Do they provide the following information:	
a. Sample identification number?	Y
b. Name of collector?	
c. Date and time of collection?	7
d. Place of collection?	
e. Parameter(s) requested and preservitives used?	Y
3. Do they remain legible even if wet?	Y
B. Sample Seals	
or dample dead	1
1. Are sample seals placed on those containers to ensure samples are not altered?	Y
C. Field Logbook	
1. Is a field logbook maintained?	Y
2. Does it document the following:	
a. Purpose of sampling (e.g., detection or assessment)?	Y
b. Location of well(s)?	ĭ
c. Total depth of each well?	
d. Static water level depth and measurement technique?	- Y
e. Presence of immiscible layers and detection method?	-
f. Collection method for immiscible layers and sample identification numbers?	Y
g. Well evacuation procedures?	Y
a. Sample withdrawal procedure?	Y
i. Dess the wife of collections	Υ
j. Well sampling sequence?	Y Y
k. Types of sample containers and sample identification number(s)?	Y
Disagraphic Commence	Y
m. Parameters requested?	Y
n. Field analysis data and method(s)?	Y
o. Sample distribution and transporter?	Y
p. Field observations?	
	Y

with the territory of t	Y/N
Unusual well recharge rates?	Y
—Equipment malfunction(s)?	Y
—Possible sample contamination?	
Sampling rate?	Y Y
D. Chain-of-Custody Record	+
1. Is a chain-of-custody record included with each sample?	Y
2. Does it document the following:	Y
a. Sample number?	
b. Signiture of collector?	
c. Date and time of collection?	Y
d. Sample type?	
e. Station location?	. Y
f. Number of containers?	Y
g. Parameters requested?	· · · · · · · · · · · · · · · · · · ·
h. Signatures of persons involved in chain-of-custody?	Y
i. Inclusive dates of custody?	Y
E. Sample Analysis Request Sheet. 1. Does a sample analysis request sheet accompany each sample?	?
2. Does the request sheet document the following:	
a. Name of person receiving the sample?	?
b. Date of sample receipt?	,
c. Duplicates?	?
d. Analysis to be performed?	?
IV. Review of Quality Assurance/Quality Control A. Is the validate to the later than the later and field generated data ensured by a QA/QC program?	Y
B. Does the QA/QC program include:	
1. Documentation of any deviation from approved procedures?	Y

養

2. Documentation of analytical results for: a. Blanks? b. Standards? c. Duplicates? d. Spiked samples? e. Detectable limits for each parameter being analyzed? C. Are approved statistical methods used? D. Are QC samples used to correct data? Are all data critically examined to ensure it has been properly calculated and reported? Y. J. Surficial Well Inspection and Field Observation Are the wells adequately maintained? Are the monitoring wells protected and secure? Do the wells have surveyed casing elevations? Are the ground-water samples turbid? Have all physical characteristics of the site been noted in the inspector's field notes (i.e., surface waters, topography, surface features)? Has a site sketch been prepared by the field inspector with scale, north arrow, location(s) of buildings, location(s) of regulated units, locations of monitoring		Y/N
b. Standards? c. Duplicates? d. Spiked samples? e. Detectable limits for each parameter being analyzed? C. Are approved statistical methods used? C. Are approved statistical methods used? C. Are all data critically examined to ensure it has been properly calculated and reported? Y. Are all data critically examined to ensure it has been properly calculated and reported? Y. Are the wells adequately maintained? Y. Are the wells adequately maintained? Y. Are the monitoring wells protected and secure? Y. Do the wells have surveyed casing elevations? Y. Are the ground-water samples turbid? Have all physical characteristics of the site been noted in the inspector's field notes (i.e., surface waters, topography, surface features)? Has a site sketch been prepared by the field inspector with scale, north arrow, location(s) of buildings, location(s) of regulated units, locations of monitoring	2. Documentation of analytical results for:	
b. Standards? c. Duplicates? d. Spiked samples? e. Detectable limits for each parameter being analyzed? C. Are approved statistical methods used? C. Are approved statistical methods used? C. Are all data critically examined to ensure it has been properly calculated and reported? Y. Are all data critically examined to ensure it has been properly calculated and reported? Y. Are the wells adequately maintained? Y. Are the wells adequately maintained? Y. Are the monitoring wells protected and secure? Y. Do the wells have surveyed casing elevations? Y. Are the ground-water samples turbid? Have all physical characteristics of the site been noted in the inspector's field notes (i.e., surface waters, topography, surface features)? Has a site sketch been prepared by the field inspector with scale, north arrow, location(s) of buildings, location(s) of regulated units, locations of monitoring	a Rinabe?	
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e. Detectable limits for each parameter being analyzed? Are approved statistical methods used? Are QC samples used to correct data? Are all data critically examined to ensure it has been properly calculated and reported? Y. Are the wells inspection and Field Observation Are the wells adequately maintained? Are the monitoring wells protected and secure? Do the wells have surveyed casing elevations? Are the ground-water samples turbid? Have all physical characteristics of the site been noted in the inspector's field notes (i.e., surface waters, topography, surface features)? Has a site sketch been prepared by the field inspector with scale, north arrow, location(s) of buildings, location(s) of regulated units, locations of monitoring		
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Are the wells have surveyed casing elevations? Are the ground-water samples turbid? Are the ground-water samples turbid? Have all physical characteristics of the site been noted in the inspector's field notes (i.e., surface waters, topography, surface features)? Has a site sketch been prepared by the field inspector with scale, north arrow, location(s) of buildings, location(s) of regulated units, locations of monitoring	C. Are approved statistical methods used?	
Are the wells have surveyed casing elevations? Are the ground-water samples turbid? Have all physical characteristics of the site been noted in the inspector's field notes (i.e., surface waters, topography, surface features)? Has a site sketch been prepared by the field inspector with scale, north arrow, location(s) of buildings, location(s) of regulated units, locations of monitoring	D. Are QC samples used to correct data?	?
Are the wells adequately maintained? Are the monitoring wells protected and secure? Y Do the wells have surveyed casing elevations? Are the ground-water samples turbid? Have all physical characteristics of the site been noted in the inspector's field notes (i.e., surface waters, topography, surface features)? Has a site sketch been prepared by the field inspector with scale, north arrow, location(s) of buildings, location(s) of regulated units, locations of monitoring	E. Are all data critically examined to ensure it has been properly calculated a	and
Are the wells adequately maintained? Are the monitoring wells protected and secure? Y Do the wells have surveyed casing elevations? Are the ground-water samples turbid? Have all physical characteristics of the site been noted in the inspector's field notes (i.e., surface waters, topography, surface features)? Has a site sketch been prepared by the field inspector with scale, north arrow, location(s) of buildings, location(s) of regulated units, locations of monitoring	·	
Are the monitoring wells protected and secure? Do the wells have surveyed casing elevations? Are the ground-water samples turbid? Have all physical characteristics of the site been noted in the inspector's field notes (i.e., surface waters, topography, surface features)? Has a site sketch been prepared by the field inspector with scale, north arrow, location(s) of buildings, location(s) of regulated units, locations of monitoring	VII. Surficial Well Inspection and Field Observation	
Do the wells have surveyed casing elevations? Are the ground-water samples turbid? Have all physical characteristics of the site been noted in the inspector's field notes (i.e., surface waters, topography, surface features)? Has a site sketch been prepared by the field inspector with scale, north arrow, location(s) of buildings, location(s) of regulated units, locations of monitoring	A. Are the wells adequately maintained?	Y
Are the ground-water samples turbid? Have all physical characteristics of the site been noted in the inspector's field notes (i.e., surface waters, topography, surface features)? Has a site sketch been prepared by the field inspector with scale, north arrow, location(s) of buildings, location(s) of regulated units, locations of monitoring	3. Are the monitoring wells protected and secure?	Y
Have all physical characteristics of the site been noted in the inspector's field notes (i.e., surface waters, topography, surface features)? Has a site sketch been prepared by the field inspector with scale, north arrow, location(s) of buildings, location(s) of regulated units, locations of monitoring	C. Do the wells have surveyed casing elevations?	Y
Have all physical characteristics of the site been noted in the inspector's field notes (i.e., surface waters, topography, surface features)? Has a site sketch been prepared by the field inspector with scale, north arrow, location(s) of buildings, location(s) of regulated units, locations of monitoring). Are the ground-water samples turbid?	Y
location(s) of buildings, location(s) of regulated units, locations of monitoring	L. Have all physical characteristics of the site been noted in the inspector's fic notes (i.e., surface waters, topography, surface features)?	eld
9		
		1

			· ·		Y/
VIII. Conclusions	•				
A. Is the facility currently according to the statisti	operating uncal analyses	nder the cor performed b	rect monitoring pro by the current opera-	garam for?	Ÿ
3. Does the ground-water detection or assessment the facility?	monitoring of any possit	system, as d ole ground-v	esigned and operate	d, allow for caused by	Y
C. Does the sampling and and, where possible, ass constituents to ground v facility?	ess the natur	e and extent	Of a release of hand	dans	_{>} Y
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Figure 4.3 Relationship of Technical Inadequacies to Ground-Water Performance Standards

Examples of Basic Elements Required by Performance Standards	Examples of Technical Inadequacies that may Constitute Violations	Regulatory Citations
Uppermost Aquifer must be correctly identified.	 failure to consider aquifers hydraulically interconnected to the uppermost aquifer. 	§265.90(a) §265.91(a)(1, 2) §270.14(c)(2)
	• incorrect identification of certain formations as confining layers or aquitards.	§265.90(a) §265.91(a)(1, 2) §270.14(c)(2)
	 failure to use test drilling and/or soil borings to characterize subsurface hydrogeology. 	\$265.90(a) \$265.91(a)(1, 2) \$270.14(c)(2)
2. Ground-water flow directions and rates must be properly determined.	 failure to use piezometers or wells to determine ground-water flow rates and directions (or failure to use a sufficient number of them). 	§265.90(a) §265.91(a)(1, 2) §270.14(c)(2)
	 failure to consider temporal variations in water levels when establishing flow directions (e.g., seasonal variations, short-term fluctuations due to pumping). 	§265.90(a) §265.91(a)(1, 2) §270.14(c)(2)
	failure to assess significance of vertical gradients when evaluating flow rates and directions.	§265.90(a) §265.91(a)(1,-2) §270.14(c)(2)
	follows to use standard/consistent commande a commander consistent level elevations.	\$265.90(a) \$265.91(a)(1, 2) \$270.14(c)(2)
·	• failure of the owner/operator (o/o) to consider the effect of local withdrawal wells on ground-water flow direction.	\$265.90(a) \$265.91(a)(1)
	 failure of the o/o to obtain sufficient water level measurements. 	§265.90(a) §265.91(a)(1)

Examples of Basic Elements Required by Performance Standards	Examples of Technical Inadequacies that may Constitute Violations	Regulatory Citations	
3. Background wells must be located so as to yield	 failure of the o/o to consider the effect of local withdrawal wells on ground-water flow direction. 	§265.90(a) §265.91(a)(1)	
samples that are not affected by the facility.	 failure of the o/o to obtain sufficient water level measurements. 	§265.90(a) §265.91(a)(1)	
	 failure of the o/o to consider flow path of dense immiscibles in establishing upgradient well locations. 	§265.90(a) §265.91(a)(1)	
4: · · · · · · · · · · · · · · · · · · ·	• failure of the o/o to consider seasonal fluctuations in ground-water flow direction.	\$265.90(a) \$265.91(a)(1)	
	• failure to install wells hydraulically upgradient, except in cases where upgradient water quality is affected by the facility (e.g., migration of dense immiscibles in the upgradient direction, mounding water beneath the facility).	§265.90(a) §265.91(a)(1)	
•	failure of the o/o to adequately characterize subsurface hydrogeology.	§265.90(a) §265.91(a)(1)	
	• wells intersect only ground water that flows around facility.	§265.90(a) §265.91(a)(1)	
4. Background wells must be constructed so as	wells constructed of materials that may release or absorb constituents of concern .	\$265.90(a) . \$265.91(a)	
that are	• wells improperly scaled—congruination	\$265.90(a) \$265.91(a), (8)	
representative of in-situ ground-water quality.	 nested or multiple screen wells are used and it cannot be demonstrated that there has been no movement of ground water between strata. 	§265.90(a) §265.91(a)(1, 2)	

Examples of Basic Elements Required by Performance Standards	Examples of Technical Inadequacies that may Constitute Violations	Regulatory Citations	
	 improper drilling methods were used, possibly contaminating the formation. 	§265.90(a) §265.91(a)	
to yield samples that are	 well intake packed with materials that may contaminate sample. 	§265.90(a) §265.91(a), (c)	
representative of in-situ ground-water quality.	 well screens used are of an inappropriate length. 	§265.90(a) §265.91(a)(1, 2)	
(Continued)	 wells developed using water other than formation water. 	\$265.90(a) \$265.91(a)	
	 improper well development yielding samples with suspended sediments that may bias chemical analysis. 	\$265.90(a) \$265.91(a)	
	 use of drilling muds or nonformation water during well construction that can bias results of samples collected from wells. 	§265.90(a) §265.91(a)	
5. Downgradient monitoring wells	wells not placed immediately adjacent to waste management area.	§265.90(a) §265.91(a)(2)	
must be located so as to ensure the immediate	 failure of o/o to consider potential pathways for dense immiscibles. 	§265.90(a) §265.91(a)(2)	
detection of any contamination migrating from the	• inadequate vertical distribution of wells in thick or heavily stratified aquifer.	\$265.90(a) \$265.91(a)(2)	
facility.	• inadequate horizontal distribution of wells in additions of varying hydraulic containing.	\$265.90(a) \$265.91(a)(2)	
	 likely pathways of contamination (e.g., buried streams channels, fractures, areas of high permeability) are not intersected by wells. 	\$265.90(a) \$265.91(a)(2)	
	 well network covers uppermost but not interconnected aquifers. 	§265.90(a) §265.91(a)(2)	

· use of an inappropriate sampling

use of improper sample preservation

device

techniques.

\$265.90(a)

\$265.92(a) \$265.93(d)(4) \$270.48(c)(4)

12635((a)

\$265.92(a) \$265.93(d)(4) \$270.14(c)(4)

	Elements Required by Performance Standards	Examples of Technical Inadequacie that may Constitute Violations	Regulatory Citations	
	7. Samples from background and downgradient wells must be	 samples collected with a device that is constructed of materials that interfere with sample integrity. 	\$265.90(a) \$265.92(a) \$265.93(d)(4) \$270.14(c)(4)	
-	properly collected and analyzed. (Continued)	 samples collected with a non-dedicated sampling device that is not cleaned between sampling events. 	§265.90(a) §265.92(a) §265.93(d)(4) §270.14(c)(4)	
		· improper use of a sampling device such that sample quality is affected (e.g., degassing of sample caused by agitation of bailer).	\$265.90(a) \$265.92(a) \$265.93(d)(4) \$270.14(c)(4)	
-		• improper handling of samples (e.g., failure to eliminate headspace from containers of samples to be analyzed for volatiles).	\$265.90(a) \$265.92(a) \$265.93(d)(4) \$270.14(c)(4)	
		failure of the sampling plan to establish procedures for sampling immiscibles (i.e., "floaters" and "sinkers").	\$265.90(a) \$265.92(a) \$265.93(d)(4) \$270.14(c)(4)	
		failure to follow appropriate QA/QC procedures.	\$265.90(a) \$265.92(a) \$265.93(d)(4) \$270.14(c)(4)	
_	•	failure to ensure sample integrity through the use of proper chain-of-citiendy procedures.	\$265.90(a) \$265.92(a) \$265.93(d)(4) \$270.14(c)(4)	
Ser.	•	methods used for sample analysis (other than those specified in SW-846).	\$265.92(a) \$265.93(d)(4) \$270.14(c)(4)	
	1 1	failure to perform analysis in the field on unstable parameters or constituents (e.g., pH, Eh, specific conductance, alkalinity, dissolved oxygen).	\$265.90(a) \$265.92(a) \$265.93(d)(4) \$270.14(c)(4)	

	Elements Required by Performance Standards	Examples of Technical Inadequacies that may Constitute Violations	Regulatory Citatio	ns
	7. Samples from background and downgradient wells must be properly collected and analyzed. (Continued)	 use of sample containers that may interfere with sample quality (e.g., synthetic containers used with volatile samples). failure to make proper use of sample blanks. 	\$265.90(a) \$265.92(a) \$265.93(d)(4) \$270.14(c)(4) \$265.90(a)	
			§265.92(a) §265.93(d)(4) §270.14(c)(4)	
	·			
	,			
			·	
			-	

Appendix B (Analytical Results)



Page: 1 of 3

LLI Sample No. WW 2661222 Collected: 2/11/97 at 09:30 by BK

Submitted: 2/11/97 Reported: 2/26/97

Discard: 3/ 6/97

CAT

NO. 1861

0418

0420

0539

7288

7289

0273

0574

MW-1R Grab Water Sample

Philadelphia Coke Company

Account No: 03464

Woodward-Clyde Consultants-PA 1400 Union Meeting Road

Suite 202

AS RECEIVED

Blue Bell PA 19422-1972

P.O. 87C2839A-8 Rel.

LIMIT OF **RESULTS** QUANTITATION UNITS ANALYSIS NAME PAH's in Water See Page ug/1 < 0.5 Trichloroethene Tetrachloroethene < 0.5 0.5 ug/1 < 1. ug/1 1. Benzene **Ethylbenzene** ug/l < 1. ug/1 Toluene 19.0 1.0 mg/] The Total Organic Carbon (TOC) result reported above was determined by measuring total carbon by a persulfate digestion/infrared detection method on an acidified sample which has been purged of inorganic carbon using nitrogen. It represents "non-purgeable TOC"

17.7 Total Organic Halogen 17.7 5.0 ug/l Total organic halogen (TOX) is a surrogate measurement used to estimate the total quantity of halogenated organic material in a sample. Duplicate determinations are required for the method, in order to evaluate random bias. The results for this sample were:

18.8

16.6

The reported result is an average of these determinations. The second column determinations were greater than 10% of the sum of the two column determinations for the TOX analysis. This could cause erroneously high results and may be due to inorganic contaminants. with potassium nitrate wash and addition of sodium sulfite failed to reduce the second column values.

0200 0280

Specific Conductance

6.96 0.010

2.740. 5.0 umhos/cm

1 COPY TO Woodward-Clyde Consultants-PA ATTN: Ms. Barb Koptcho

> Questions? Contact your Client Services Representative at (717) 656-2300 Helen A. Tuman 10:55:09 D 0001 120586 552712 0.00 00033320 ASR000 232

> > Respectfully Submitted Erik Frederiksen, BA Group Leader, Water Quality







2 of Page:

LLI Sample No. WW 2661222 Collected: 2/11/97 at 09:30 by BK

Submitted: 2/11/97 Reported: 2/26/97

Discard: 3/ 6/97

MW-1R Grab Water Sample

Philadelphia Coke Company

Account No: 03464

Woodward-Clyde Consultants-PA 1400 Union Meeting Road

Suite 202

Blue Bell PA 19422-1972

P.O. 87C2839A-8

Rel.

AS RECEIVED LIMIT OF

			75 14		
CAT NO.	ANALYSIS NAME		RESULTS	LIMIT OF QUANTITATION	UNITS
PAH's	in Water				
3280	Naphthalene		< 13.	13.	ug/1
3281	Acenaphthylene		< 25.	25.	ug/l
3282	Acenaphthene		< 25.	25.	ug/1
3283	Fluorene		< 2.5	2.5	ug/1
3284	Phenanthrene		< 2.5	2.5	ug/1
3285	Anthracene	•	< 1:3	1.3	ug/1
3286	Fluoranthene		< 0.63	0.63	ug/l
3287	Pyrene		< 21.5	2.5	ug/1
3288	Benzo(a)anthracene		< 0.13	0.13	ug/1
3289	Chrysene		< 1.3	1.3	uğ/l
3290	Benzo(b) fluoranthene	,	< 0.25	0.25	ug/1
3291	Benzo(k)fluoranthene		< 0.13	0.13	ug/1
3292	Benzo(a)pyrene		< 0.25	0.25	ug/1
3293	Dibenzo(a,h)anthracene		< 0.25	0.25	ug/1
3294	Benzo(g,h,i)perylene		< 0.63	0.63	ug/1
3295	Indeno(1,2,3-cd)pyrene	•	< 0.63	0.63	ug/1
0230	andono (a) a, b od py one		0.00	. 0.00	-g. '

Due to insufficient sample size, we were unable to report our usual quantitation limits. The values reported represent the lowest quantitation limits obtainable.

The sample was received at the laboratory with insufficient time remaining in the hold time for the extraction to be performed. The client was notified and approved proceeding with the extraction and analysis.

> Questions? Contact your Client Services Representative Helen A. Tuman at (717) 656-2300

> > Respectfully Submitted Jenifer E. Hess, B.S. Group Leader Pesticides/PCBs





LABORATORY CHRONICLE

Page: 3 of 3



LLI Sample No. WW 2661222 Collected: 02/11/97 at 09:30 by BK

Submitted: 02/11/97

MW-1R Grab Water Sample

Philadelphia Coke Company 1R--- SDG#:

Account No: 03464 Woodward-Clyde Consultants-PA 1400 Union Meeting Road Suite 202 Blue Bell PA 19422-1972

CAT NO	ANALYSIS NAME	METHOD	TRIAL	ANALYSIS DATE AND TIME	ANALYST
1861 3337	PAH's in Water PAH Water Extraction	SW-846 8310 SW-846 3510B	1 2	02/18/97 2121 02/17/97 1830	Daniel A. O'Lear Marcie A. Natale
0418 0420 0539 7288 7289	Trichloroethene Tetrachloroethene Benzene Ethylbenzene Toluene	SW-846 8010B SW-846 8010B SW-846 8020A SW-846 8020A SW-846 8020A	1 1 1 1	02/15/97 0442 02/15/97 0442 02/15/97 0442 02/15/97 0442 02/15/97 0442	Matthew S. Thomas Matthew S. Thomas Matthew S. Thomas Matthew S. Thomas Matthew S. Thomas
0273 0574	Total Organic Carbon Total Organic Halogen	EPA 415.1 SW-846 9020B	1	02/12/97 0947 02/13/97 1118	Bill L. Hamaker Livonia Smith
0200 0280	pH Specific Conductance	EPA 150.1 EPA 120.1	1	02/12/97 0148 02/12/97 0200	Daniel S. Smith Daniel S. Smith







1 of Page:

LLI Sample No. WW 2661224 Collected: 2/11/97 at 11:30 by BK

Submitted: 2/11/97

Reported: 2/26/97

Discard: 3/6/97

MW-2R Grab Water Sample

Philadelphia Coke Company

Account No: 03464

Woodward-Clyde Consultants-PA 1400 Union Meeting Road

Suite 202

Blue Bell PA 19422-1972

P.O. 87C2839A-8

Rel.

		AS RE	CEIVED LIMIT OF	•	
CAT NO.	ANALYSIS NAME	RESULTS	QUANTITATION	UNITS	
1861 0418 0420 0539 7288 7289 0273	PAH's in Water Trichloroethene Tetrachloroethene Benzene Ethylbenzene Toluene Total Organic Carbon The Total Organic Carbon (TOC) result measuring total carbon by a persulfat on an acidified sample which has been nitrogen. It represents "non-purgeal Total Organic Halogen	te digestion/inf n purged of inor ole TOC". 29.5	rared detection ganic carbon us 5.0	method ing ug/l	2
	Total organic halogen (TOX) is a surrected quantity of halogenated organic determinations are required for the bias. The results for this sample we 32	c material in a method, in order	sample. Duplic	ate	

26.7 The reported result is an average of these determinations. The second column determinations were greater than 10% of the sum of the two column determinations for the TOX analysis. This could cause erroneously high results and may be due to inorganic contaminants. Rinses with potassium nitrate wash and addition of sodium sulfite failed to reduce the second column values.

0200 0280

Specific Conductance

8.17 1.780.

0.010

5.0 umhos/cm

Woodward-Clyde Consultants-PA ATTN: Ms. Barb Koptcho 1 COPY TO

> Questions? Contact your Client Services Representative Helen A. Tuman 10:56:02 D 0001 at (717) 656-2300 120586 552712 0.00 00033320 ASR000 232

> > Respectfully Submitted Erik Frederiksen, BA Group Leader, Water Quality







Page: 2 of

LLI Sample No. WW 2661224 Collected: 2/11/97 at 11:30 by BK

Submitted: 2/11/97 Reported: 2/26/97 Discard: 3/6/97

MW-2R Grab Water Sample

Philadelphia Coke Company

Account No: 03464 Woodward-Clyde Consultants-PA 1400 Union Meeting Road

Suite 202

Blue Bell PA 19422-1972

P.O. 87C2839A-8

Rel.

AS RECEIVED

	CAT No.	ANALYSIS NAME	RESULTS	LIMIT OF QUANTITATION	UNITS
	PAH's	in Water	<u>'</u> 1		
	3280	Naphthalene	< 45.	45. 25.	ug/l
	3281 3282	Acenaphthylene Acenaphthene	< 25. < 25.		ug/l ug/l
)	3283	Fluorene	< 9.	23. 9.	ug/1
	3284	Phenanthrene	7.6	2.5	ug/1
	3285	Anthracene	1.5		ug/1
	3286	Fluoranthene	2.61	0.63	ug/l
	3287	Pyrene	< 2.5	. 2,5	ug/1
	3288	Benzo(a)anthracene	0.14	0.13	ug/1
	3289	Chrysene	< 1.3	1.3	ug/]
	3290	Benzo(b)fluoranthene	< 0.25	0.25	ug/1
	3291	Benzo(k)fluoranthene	< 0.13	0.13	ug/l
	3292	Benzo(a)pyrene	< 0,.25	0.25	ug/1
	3293	Dibenzo(a,h)anthracene	< 0.25	0.25	ug/l
	3294	Benzo(g,h,i)perylene	< 0,.63	0.63	ug/]
	3295	Indeno(1,2,3-cd)pyrene	< 0.63	0.63	.ug/1

Due to insufficient sample size and interfering peaks on the chromatogram, the values reported represent the lowest quantitation limits obtainable.

The sample was received at the laboratory with insufficient time remaining in the hold time for the extraction to be performed. The client was notified and approved proceeding with the extraction and analysis.

> Questions? Contact your Client Services Representative at (717) 656-2300 Helen A. Tuman

> > Respectfully Submitted Jenifer E. Hess, B.S. Group Leader Pesticides/PCBs





LABORATORY CHRONICLE



3 of 3 Page:

LLI Sample No. WW 2661224 Collected: 02/11/97 at 11:30 by BK

Submitted: 02/11/97

MW-2R Grab Water Sample

Philadelphia Coke Company 2R--- SDG#:

CAT NO ANALYSIS NAME METHOD SW-846 8310 SW-846 3510B 1861 PAH's in Water 3337 PAH Water Extraction SW-846 8010B SW-846 8010B SW-846 8020A SW-846 8020A 0418 Trichloroethene 0420 Tetrachloroethene 0539 Benzene 7288 Ethylbenzene 7289 Toluene SW-846 8020A 0273 0574 Total Organic Carbon Total Organic Halogen EPA 415.1 SW-846 9020B EPA 150.1 EPA 120.1 0200 pH Specific Conductance 0280

Account No: 03464 Woodward-Clyde Consultants-PA 1400 Union Meeting Road Suite 202 Blue Bell PA 19422-1972

TRI	AL	ANALYSIS DATE AND TIM	E ANALYS	Γ
1 2		02/18/97 223 02/17/97 183		A. O'Lear A. Natale
1 1 1 1 1		02/15/97 065 02/15/97 065 02/15/97 065 02/15/97 065 02/15/97 065	1 Todd T 1 Todd T 1 Todd T	. Smythe . Smythe . Smythe . Smythe . Smythe
1 1		02/12/97 101 02/13/97 104		. Hamaker a Smith
1		02/12/97 015		S. Smith S. Smith





Page: 1 of 3

LLI Sample No. WW 2661226 Collected: 2/11/97 at 11:15 by BK

Submitted: 2/11/97 Reported: 2/26/97

Discard: 3/6/97

MW-3 Grab Water Sample

Philadelphia Coke Company

Account No: 03464

Woodward-Clyde Consultants-PA

1400 Union Meeting Road

Suite 202

Blue Bell PA 19422-1972

P.O. 87C2839A-8

Rel.

CAT NO.	ANALYSIS NAME	RESUL		IT OF ITATION	UNITS	
0420 0539 7288	PAH's in Water Trichloroethene Tetrachloroethene Benzene Ethylbenzene Toluene Total Organic Carbon The Total Organic Carbon (TOC) result remeasuring total carbon by a persulfate don an acidified sample which has been punnitrogen. It represents "non-purgeable"	igestic	.2 above was de on/infrared d	etection	method	2
0574	Total Organic Halogen Total organic Halogen (TOX) is a surrogat total quantity of halogenated organic mat determinations are required for the metho bias. The results for this sample were: 21.9 19.4 The reported result is an average of	20: te meas terial, od, in	surement used in a sample. order to eva	Duplica luate ran	ate	

The second column determinations were greater than 10% of the sum of the two column determinations for the TOX analysis. This could cause erroneously high results and may be due to inorganic contaminants. Rinses with potassium nitrate wash and addition of sodium sulfite failed to reduce the second column values.

DH 6.74 0.010

0200 pH 6.74 0.010
0280 Specific Conductance 3.630. 5.0 umbos/cm

1 COPY TO Woodward-Clyde Consultants-PA ATTN: Ms. Barb Koptcho

Questions? Contact your Client Services Representative Helen A. Tuman at (717) 656-2300 10:57:00 D 0001 13 120586 552712 232 0.00 00033320 ASR000

Respectfully Submitted Erik Frederiksen, BA Group Leader, Water Quality









3 Page: 2 of

LLI Sample No. WW 2661226 Collected: 2/11/97 at 11:15 by BK

Submitted: 2/11/97 Reported: 2/26/97

3/ 6/97 Discard:

MW-3 Grab Water Sample

Philadelphia Coke Company

Account No: 03464 Woodward-Clyde Consultants-PA

1400 Union Meeting Road

Suite 202

Blue Bell PA 19422-1972

P.O. 87C2839A-8

Rel.

		AS RECI	
CAT NO.	ANALYSIS NAME	RESULTS	LIMIT OF QUANTITATION UNITS
PAH's	in Water		,
3280 3281 3282 3283 3284 3285 3286 3287 3288 3290 3291 3292 3293 3294 3295	Naphthalene Acenaphthylene Acenaphthene Fluorene Phenanthrene Anthracene Fluoranthene Pyrene Benzo(a)anthracene Chrysene Benzo(b)fluoranthene Benzo(b)fluoranthene Benzo(a)pyrene Dibenzo(a,h)anthracene Benzo(g,h,i)perylene Indeno(1,2,3-cd)pyrene Due to insufficient sample size. quantitation limits. The values limits obtainable.	< 13. < 25. < 25. < 2.5 < 2.5 < 1.3 < 0.63 < 2.5 < 0.13 < 1.3 < 0.25 < 0.13 < 0.25 < 0.63 < 0.63 < 0.63 < reported represent t	13. ug/l 25. ug/l 25. ug/l 25. ug/l 2.5 ug/l 2.5 ug/l 1.3 ug/l 0.63 ug/l 0.13 ug/l 0.25 ug/l 0.13 ug/l 0.25 ug/l 0.63 ug/l 0.63 ug/l 0.63 ug/l 0.63 ug/l 0.63 ug/l 0.63 ug/l

The sample was received at the laboratory with insufficient time remaining in the hold time for the extraction to be performed. The client was notified and approved proceeding with the extraction and analysis.

> Questions? Contact your Client Services Representative at (717) 656-2300 Helen A. Tuman

> > Respectfully Submitted Jenifer E. Hess, B.S. Group Leader Pesticides/PCBs







METHOD

LABORATORY CHRONICLE

Page: 3 of 3

LLI Sample No. WW 2661226 Collected: 02/11/97 at 11:15 by BK

Submitted: 02/11/97

Philadelphia Coke Company

ANALYSIS NAME

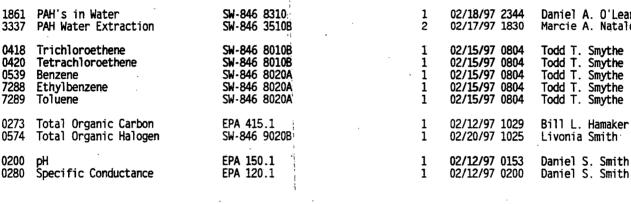
NO

Blue Bell PA 19422-1972 MW-3 Grab Water Sample 3---- SDG#: CAT

	<u>(</u>			
•	,	TRIAL	ANALYSIS DATE AND TIME	ANALYST
,		1 2	02/18/97 2344 02/17/97 1830	Daniel A. O'Lear Marcie A. Natale
		1 1 1 1 1	02/15/97 0804 02/15/97 0804 02/15/97 0804 02/15/97 0804 02/15/97 0804	Todd T. Smythe
		1	02/12/97 1029	Bill L. Hamaker

Account No: 03464 Woodward-Clyde Consultants-PA 1400 Union Meeting Road

Suite 202







1 of 3 Page:

LLI Sample No. WW 2661227 Collected: 2/11/97 at 10:30 by BK

Submitted: 2/11/97 Reported: 2/26/97 Discard: 3/6/97

MW-4R Grab Water Sample

Philadelphia Coke Company

Account No: 03464 Woodward-Clyde Consultants-PA 1400 Union Meeting Road

Suite 202

Blue Bell PA 19422-1972

P.O. 87C2839A-8

Rel.

	•	AS REC			
CAT			LIMIT OF		
NO.	ANALYSIS NAME	RESULTS	QUANTITATION	UNITS	
1861	PAH's in Water			See Page	2
0418	Trichloroethene	< 0.5	0.5	ug/l	
0420	Tetrachloroethene	< 0.5	0.5	ug/1	
0539	Benzene	< 1.	1.	ug/1	
7288	Ethylbenzene	< 1.	1. 1.	ug/1	
7289	Toluene	< 1.	ī.	ug/1	
0273	Total Organic Carbon	45.3	1.0	mg/l	
02/3	The Total Organic Carbon (TOC) resu				
	measuring total carbon by a persulf	ato digoction/info	rand detection	mothod	
	measuring total carbon by a persuit	are digestion initiate	area decection	inculou	
	on an acidified sample which has be	en purged of thory	janic carbon us	ing	
	nitrogen. It represents "non-purge		. .	/7	
0574	Total Organic Halogen	9.5	5.0	ug/1	
	Total organic halogen (TOX) is a su				
	total quantity of halogenated organ				
	determinations are required for the		to evaluate ra	ndom	•
	bias. The results for this sample				
		7.3			
		11.7			
	The reported result is an ave		erminations.		
0200	pH .	6'.79	0.010		
0280	Specific Conductance	2,590	5.0	umhos/cm	

1 COPY TO Woodward-Clyde Consultants-PA ATTN: Ms. Barb Koptcho

> Questions? Contact your Client Services Representative at (717) 656-2300 120586 552712 Helen A. Tuman 10:57:38 D 0001 232 0.00 00033320 ASR000

> > Respectfully Submitted Erik Frederiksen. BA Group Leader, Water Quality







Page: 2 of

LLI Sample No. WW 2661227 Collected: 2/11/97 at 10:30 by BK

Submitted: 2/11/97 Reported: 2/26/97 3/ 6/97 Discard:

MW-4R Grab Water Sample

ANALYSIS NAME

Philadelphia Coke Company

Account No: 03464 Woodward-Clyde Consultants-PA 1400 Union Meeting Road

ug/1

Suite 202

Blue Bell PA 19422-1972

P.O. 87C2839A-8

Rel.

AS RECEIVED LIMIT OF **RESULTS** QUANTITATION UNITS

PAH's in Water 3280

CAT

NO.

3295

< 10. 10. Naphthalene ug/l Acenaphthylene Acenaphthene 3281 3282 < 20. 20. ug/1 < 20. 20. ug/1 3283 Fluorene ug/1 ug/1 3284 Phenanthrene 3285 Anthracene ug/1 3286 3287 Fluoranthene < 0.5 0.5 ug/1 < 2. ug/1 Pyrene < 0.1 3288 Benzo(a)anthracene 0.1 ug/1 3289 ug/1 Chrysene 0.2 Benzo(b)fluoranthene 3290 ug/1 3291 Benzo(k)fluoranthene 0.1 ug/1 < 0.2 < 0.2 < 0.5 0.2 ug/1 3292 Benzo(a)pyrene 3293 3294 ug/1 Dibenzo(a,h)anthracene Benzo(g,h,i)perylene Indeno(1,2,3-cd)pyrene ug/1 0.5

The sample was received at the laboratory with insufficient time remaining in the hold time for the extraction to be performed. The client was notified and approved proceeding with the extraction and analysis.

< 0.5

Questions? Contact your Client Services Representative Helen A. Tuman at (717) 656-2300

> Respectfully Submitted Jenifer E. Hess, B.S. Group Leader Pesticides/PCBs



Lancaster Laboriories A division of Thermo Analytical Inc.

LABORATORY CHRONICLE

Page: 3 of 3

LLI Sample No. WW 2661227 Collected: 02/11/97 at 10:30 by BK

Submitted: 02/11/97

MW-4R Grab Water Sample

Philadelphia Coke Company 4R--- SDG#:

CAT NO	ANALYSIS NAME	METHOD	TRIAL	ANALYSIS DATE AND TIME	ANALYST
1861	PAH's in Water	SW-846 8310	1 2	02/19/97 0019	Daniel A. O'Lear
3337	PAH Water Extraction	SW-846 3510B		02/17/97 1830	Marcie A. Natale
0418 0420 0539 7288 7289	Trichloroethene Tetrachloroethene Benzene Ethylbenzene Toluene	SW-846 8010B SW-846 8010B SW-846 8020A SW-846 8020A SW-846 8020A	1 1 1 1	02/15/97 0840 02/15/97 0840 02/15/97 0840 02/15/97 0840 02/15/97 0840	Todd T. Smythe Todd T. Smythe Todd T. Smythe Todd T. Smythe Todd T. Smythe
0273	Total Organic Carbon	EPA 415.1	1	02/12/97 1053	Bill L. Hamaker
0574	Total Organic Halogen	SW-846 9020B		02/20/97 1039	Livonia Smith
0200	pH	EPA 150.1	1	02/12/97 0155	Daniel S. Smith
0280	Specific Conductance	EPA 120.1	1	02/12/97 0200	Daniel S. Smith

Account No: 03464 Woodward-Clyde Consultants-PA 1400 Union Meeting Road

Suite 202 Blue Bell PA 19422-1972







Page: 1 of

LLI Sample No. WW 2661228 Collected: 2/11/97 at 10:45 by BK

Submitted: 2/11/97 Reported: 2/26/97 Discard: 3/ 6/97

MW-5 Grab Water Sample

Philadelphia Coke Company

Account No: 03464

Woodward-Clyde Consultants-PA 1400 Union Meeting Road

Suite 202

Blue Bell PA 19422-1972

P.O. 87C2839A-8

Rel.

	•	AS RE	CEIVED		
CAT NO.	ANALYSIS NAME	RESULTS	LIMIT OF QUANTITATION	UNITS	
1861	PAH's in Water		•	See Page	2
0418	Trichloroethene	43.	0.5	ug/l	
0420	Tetrachloroethene .	14.	0.5	ug/l	
0539	Benzene	< 1.	1.	ug/l	
7288	Ethylbenzene	< 1.	1.	ug/1	
7289	Toluene	< 1.	1.	ug/1	
0273	Total Organic Carbon	4.3	1.0	mg/l	
	The Total Organic Carbon (TOC) result	reported above	e was determined	l by	
	measuring total carbon by a persulfate	digestion/inf	frared detection	method	
	on an acidified sample which has been	purged of inor	rganic carbon us	ing	
	nitrogen. It represents "non-purgeabl	e TOC".	•		
0574	Total Organic Halogen	95.	10.	ug/l	
	Total organic halogen (TOX) is a surro	gate measureme		mate the	
	total quantity of halogenated organic	material in a	sample. Duplic	ate	
	determinations are required for the me	thod, in order	to evaluate ra	ndom	
	bias. The results for this sample wer	e: '			
	84.				
	105.				
	The reported result is an averag		terminations.	•	

The second column determinations were greater than 10% of the sum of the two column determinations for the TOX analysis. This could cause erroneously high results and may be due to inorganic contaminants. Rinses with potassium nitrate wash and addition of sodium sulfite failed to reduce the second column values.

0200 6.60 0.010 392. 5:0 umhos/cm 0280 Specific Conductance

1 COPY TO Woodward-Clyde Consultants-PA ATTN: Ms. Barb Koptcho

Alternatives of the

15000 gan satta (PA 175 m.) 1 117 ASAL, 1 — Ay

Questions? Contact your Client Services Representative Helen A. Tuman 10:58:14 D 0001 13 at (717) 656-2300 120586 552712 232 0.00 00033320 ASR000

> Respectfully Submitted Erik Frederiksen, BA Group Leader, Water Quality

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Page: 2 of 3

LLI Sample No. WW 2661228 Collected: 2/11/97 at 10:45 by BK

Submitted: 2/11/97 Reported: 2/26/97 Discard: 3/6/97

MW-5 Grab Water Sample

-Phi→ladelphia Coke Company

Account No: 03464 Woodward-Clyde Consultants-PA 1400 Union Meeting Road Suite 202

Blue Bell PA 19422-1972

P.O. 87C2839A-8

Rel.

		'.	
		, AS RECE	
CAT NO.	ANALYSIS NAME	RESULTS	LIMIT OF QUANTITATION UNITS
P A H's	in Water	<u> </u>	
3280 3281 3282 3283 3284 3285 3286 3287 3288 3289 3290 3291 3292 3293 3294	Naphthalene Acenaphthylene Acenaphthene Fluorene Phenanthrene Anthracene Fluoranthene Pyrene Benzo(a)anthracene Chrysene Benzo(b)fluoranthene Benzo(a)pyrene Dibenzo(a,h)anthracene Benzo(g,h,i)perylene	< 13. < 25. < 25. < 2.5 < 2.5 < 1.3 < 0.63 < 2.5 < 0.13 < 1.3 < 0.25 < 0.13 < 0.25 < 0.63	13. ug/l 25. ug/l 25. ug/l 2.5 ug/l 2.5 ug/l 1.3 ug/l 0.63 ug/l 0.13 ug/l 0.25 ug/l 0.25 ug/l 0.25 ug/l 0.25 ug/l 0.25 ug/l
3295	<pre>Indeno(1.2,3-cd)pyrene Due to insufficient sample size, quantitation limits. The values</pre>	< 0.63 we were unable to rep	0.63 ug/l ort our usual
	limits obtainable.	•	: '

The sample was received at the laboratory with insufficient time remaining in the hold time for the extraction to be performed. The client was notified and approved proceeding with the extraction and analysis.

> Questions? Contact your Client Services Representative Helen A. Tuman at (717) 656-2300

> > Respectfully Submitted Jenifer E. Hess, B.S. Group Leader Pesticides/PCBs

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LABORATORY CHRONICLE

Page: 3 of 3



LLI Sample No. WW 2661228 Collected: 02/11/97 at 10:45 by BK

Submitted: 02/11/97

MW-5 Grab Water Sample

Philadelphia Coke Company 5---- SDG#:

Account No: 03464 Woodward-Clyde Consultants-PA 1400 Union Meeting Road

Supplied and a performing and united in the latest appreciations.

Suite 202

Blue Bell PA 19422-1972

CAT NO	ANALYSIS NAME	METHOD	TRIAL	ANALYSIS DATE AND TIME	AN ALYST
1861	PAH's in Water	SW-846 8310	1	02/19/97 0055	Daniel A. O'Lear
3337	PAH Water Extraction	SW-846 3510B	2	02/17/97 1830	Marcie A. Natale
0418 0420 0539 7288 7289	Trichloroethene Tetrachloroethene Benzene Ethylbenzene Toluene	SW-846 8010B SW-846 8010B SW-846 8020A SW-846 8020A SW-846 8020A	1 1 1 1	02/15/97 0916 02/15/97 0916 02/15/97 0916 02/15/97 0916 02/15/97 0916	Todd T. Smythe
0273	Total Organic Carbon	EPA 415.1	1	02/12/97 1101	Bill L. Hamaker
0574	Total Organic Halogen	SW-846 9020B	1	02/20/97 1158	Livonia Smith
0200	pH	EPA 150.1	1	02/12/97 0156	Daniel S. Smith
0280	Specific Conductance	EPA 120.1	1	02/12/97 0200	Daniel S. Smith

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Page: 1 of 3

LLI Sample No. WW 2661229 Collected: 2/11/97 at 11:00 by BK

Submitted: 2/11/97 Reported: 2/27/97

Discard: 3/ 7/97

MW-6 Grab Water Sample

Philadelphia Coke Company

Account No: 03464

Woodward-Clyde Consultants-PA

1400 Union Meeting Road

Suite 202

Blue Bell PA 19422-1972

P.O. 87C2839A-8

Rel.

AS RECEIVED CAT LIMIT OF **RESULTS** ANALYSIS NAME QUANTITATION NO. UNITS See Page 1861 PAH's in Water Trichloroethene < 0.5 0.5 0418 ug/1 0420 Tetrachloroethene < 0.5 0.5 ug/1 0539 Benzene 10. ug/1 7288 Ethylbenzene ug/1 5. 7.2 7289 Toluene ug/1 0273 Total Organic Carbon 1.0 mg/1The Total Organic Carbon (TOC) result reported above was determined by measuring total carbon by a persulfate digestion/infrared detection method on an acidified sample which has been purged of inorganic carbon using nitrogen. It represents "non-purgeable TOC".

Total Organic Halogen 7.1 5.0 ug/l Total Organic Halogen 0574 Total organic halogen (TOX) is a surrogate measurement used to estimate the total quantity of halogenated organic material in a sample. Duplicate determinations are required to simple were: bias. The results for this sample were: 4.7 determinations are required for the method, in order to evaluate random 9.6 The reported result is an average of these determinations. 0200 6.70 0.010 0280 Specific Conductance 5.0 8281 umhos/cm

Woodward-Clyde Consultants-PA ATTN: Ms. Barb Koptcho

> Questions? Contact your Client Services Representative at (717) 656-2300 Helen A. Tuman 03:23:44 D 0001 120586 552712 0.00 00033320 ASR000

> > Respectfully Submitted Erik Frederiksen, BA Group Leader, Water Quality







Page: 2 of

LLI Sample No. WW 2661229 Collected: 2/11/97 at 11:00 by BK

Submitted: 2/11/97 Reported: 2/27/97

Discard:

MW-6 Grab Water Sample

Philadelphia Coke Company

Account No: 03464 Woodward-Clyde Consultants-PA

1400 Union Meeting Road Suite 202

Blue Bell PA 19422-1972

P.O. 87C2839A-8

Rel.

CAT	:		AS RECEIVED			
CAT NO.	ANALYSIS NAME		RESULTS	LIMIT OF QUANTITATION	UNITS	
PAH's	in Water	× *-		Marin Agent	• •	
3280	Naphthalene		< 28.	28.	ug/1	
3281	Acenaphthylene		< 25.	25 .	ug/l	
3282	Acenaphthene	•	62.	2 5.	ug/1	
3283	Fluorene		17.5	2.5	ug/1	
3284	Phenanthrene		< 2.5	2.5	ug/1	
3285	Anthracene		< 1.3	1.3	ug/1	
2006	F1 11 -		=:=.		~ _	

3286 **Fluoranthene** 0.63 ug/1 3287 3288 Pyrene ug/1 Benzo(a)anthracene ug/1 3289 3290 3291 Chrysene ug/1 Benzo(b) fluoranthene ug/l Benzo(k)fluoranthene ug/1 3292 3293 Benzo(a)pyrene ug/1 Dibenzo(a,h)anthracene ug/1 3294 3295 Benzo(g,h,i)perylene < 0.63 0.63 ug/1 Indeno(1,2,3-cd)pyrene 0.63

Due to insufficient sample size and interfering peaks on the chromatogram, the values reported represent the lowest quantitation limits obtainable.

The sample was received at the laboratory with insufficient time remaining in the hold time for the extraction to be performed. The client was notified and approved proceeding with the extraction and analysis.

> Questions? Contact your Client Services Representative Helen A. Tuman at (717) 656-2300

> > Respectfully Submitted Jenifer E. Hess, B.S. Group Leader Pesticides/PCBs





LABORATORY CHRONICLE



Page: 3 of 3

LLI Sample No. WW 2661229 Collected: 02/11/97 at 11:00 by BK

Submitted: 02/11/97

MW-6 Grab Water Sample

Philadelphia Coke Company 6---- SDG#:

Account No: 03464 Woodward-Clyde Consultants-PA 1400 Union Meeting Road Suite 202 Blue Bell PA 19422-1972

CAT NO	ANALYSIS NAME	METHOD	TRIAL	ANALYSIS DATE AND TIME	ANALYST
1861	PAH's in Water	SW-846 8310	. 1	02/19/97 0130	Daniel A. O'Lear
3337	PAH Water Extraction	SW-846 3510B	2	02/17/97 1830	Marcie A. Natale
0418	Trichloroethene	SW-846 8010B	1	02/15/97 0953	Todd T. Smythe
0420	Tetrachloroethene	SW-846 8010B	1	02/15/97 0953	Todd T. Smythe
0539	Benzene	SW-846 8020A	1	02/15/97 0953	Todd T. Smythe
7288	Ethylbenzene	SW-846 8020A	1	02/15/97 0953	Todd T. Smythe
7289	Toluene	SW-846 8020A	1	02/15/97 0953	Todd T. Smythe
0273	Total Organic Carbon	EPA 415.1	. 1	02/12/97 1109	Bill L. Hamaker
0574	Total Organic Halogen	SW-846 9020B		02/20/97 1058	Livonia Smith
0200	pH	EPA 150.1	1	02/12/97 0157	Daniel S. Smith
0280	Specific Conductance	EPA 120.1		02/12/97 0200	Daniel S. Smith



Lar of Allino



97000805

Lab Number_____

		- -,		Date Received 2/12/97
<u> </u>		1		Matrix Code
Phile Cohe	CASE	1997 CME	FACILITY MW-/	R COLL NUMBER
COUNTY Phila	MUNICIPALITY Phila	GRANT CODE COLL NAM	E (DU ONE NUMBER	TYPE TR STD ANALYSIS
CARD (3) ID CODE (ALI	CARDS) 4-16	LATITUDE 4-10	ONGITUDE 11-18 DAT	6/45 KE VOA TE 19-24 TIME 25-8 KIND 29
Cnty Mun	T Est Case Fac		اعاط ا ا ا ا ا	Y Hr Min
I _		NUMBER 38-43 STREA	AM NAME 44-57	RELATIVE POINT S
FULL DESCRIPTION WHERE SAMPLE	3 0 0 2 1 TAKEN:	14/14/219		BEOLEGIED LAG ANALYSIS
CUSTODY LOG		Fixed	1 4/1/	REQUESTED LAB ANALYSES
How Shipped U.S. Cargo Legal Seal No. 1312089	Date 4	77,44	W/ //CI	
Received by:	<u> </u>	ÓHALITA	TIVE DEPOSIT	
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		QUANTITATIVE	PECINTC	
AMARINER		ų.	REJOLIJ	RESULTS
ANALYSIS:	•	UNITS:	ANALYSIS CODE	(SHOW DECIMAL POINTS ON LINES)
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HLORINE PRESENT IN S	SAMPLE A	WALYST SI	GNATURE CONTRACTOR	W 3/ 4/ 4/
FU M 5.0	<u> </u>			

1ADL

VOLATILE ORGANICS ANALYSIS DATA SHEET
MULTIPLE DILUTION RESULTS

EPA SAMPLE NO.

Lab Name:	Contract	:	2141429
Lab Code:	Case No.: SAS No.	: SDG	No.: 970211HP5972A
Matrix: (soil/water)	WATER	Lab Sample ID:	97000805
Sample wt/vol:	25.00 (g/mL) ML	Lab File ID:	970805
Level: (low/med)	LOW	Date Received:	·
% Moisture:	decanted: (Y/N)	Date Extracted	d:02/12/97
Concentrated Extract	Volume: (uL)	Date Analyzed:	02/12/97
Injection Volume: _		Dilution Facto	or: 1.0
GPC Cleanup: (Y/N)	N pH: 7√0 > 2	10	• .
CAS NO.		NTRATION UNITS: or ug/Kg) UG/I	

		 	+
67-64-1	Acetone	2.0	İ
	Benzene	0.020	
	Bromobenzene	0.020	
	Bromochloromethane	0.020	
	Bromodichloromethane	0.10	
75-25-2	Bromoform	0.020	Ū
74-83-9	Bromomethane	0.050	
78-93-3	2-Butanone	1.0	b
104-51-8	n-Butylbenzene	0.020	U
56-23-5	Carbon tetrachloride	0.020	U
108-90-7	Chlorobenzene	0.020	ן ט
75-00-3	Chloroethane	0.020	U
	Chloroform	1.0	U
	Chloromethane	0.020	ן ט
95-49-8	O-Chlorotoluene	0.020	שׁ
	P-Chlorotolulene	0.020	ַ
	Dibromochloromethane	0.020	ט
96-12-8	1,2-Dibromo-3-chloropropane	0.020	U
106-93-4	1,2-Dibromoethane	0.020	
74-95-3	Dibromomethane	0.020	
	1,2-Dichlorobenzene	0.020	U
541-73-1	1,3-Dichlorobenzene	0.020	U
106-46-7	1,4-Dichlorobenzene	0.020	-
	Dichlorodifluoromethane	0:050	U
75-34-3	1,1-Dichloroethane	0.060	i
107-06-2	1,2-Dichloroethane	0.020	
75-35-4	1,1-Dichloroethene	0.020	ן ט
156-59-2	cis-1,2-Dichloroethene	0.020	Ū
	trans-1,2-Dichloroethene	0.020	U
	Dichloromethane	0.020	
78-87-5	1,2-Dichloropropane	0.020	
	1,3-Dichloropropane	0.020	
594-20-7	2,2-Dichloropropane	0.020	U
		· ·	1 .

FORM I PEST

1ADL

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MU	LTIPLE DILUTION R	ESULTS	22.42.422
Lab Name:	(Contract:	2141429
Lab Code:	Case No.:	SAS No.: SDO	G No.: 970211HP5972A
<pre>Matrix: (soil/water)</pre>	WATER	Lab Sample II	D: 97000805
Sample wt/vol:	25.00 (g/mL) ML	Lab File ID:	970805
Level: (low/med)	LOW	Date Received	d:
% Moisture:	decanted: (Y/N)_	Date Extracte	ed:02/12/97
Concentrated Extract	Volume:(uL) Date Analyzed	i : 02/12/97
Injection Volume:	(uL)	Dilution Fact	tor: 1.0
GPC Cleanup: (Y/N)	N pH: 7	7210	·
	COMPOUND	CONCENTRATION UNITS (ug/L or ug/Kg) UG,	
10061-01-5 10061-02-6 98-06-6 100-41-4 87-68-3 591-78-6 99-87-6 1634-04-4	1,1-Dichloropro cis-1,3-Dichloropro trans-1,3-Dichloropro 1,1-Dimethyleth Ethylbenzene Hexachlorobutado 2-Hexanone 4-Isopropyltolu 2-Methoxy-2-met	ropropene loropropene nylbenzene liene lene chylpropane	0.020 U 0.020 U 0.020 U 0.020 U 0.020 U 0.050 U 0.020 U 0.020 U 0.020 U

0.20 T 108-10-1----4-Methyl-2-pentanone 135-98-8-----1-Methylpropylbenzene 0.020 U 91-20-3-----Napthalene 1.0 U 103-65-1----n-Propylbenzene 0.020 U 100-42-5-----Styrene 0.020 U 630-20-6-----1,1,1,2-Tetrachloroethane 0.020 U 79-34-5----1,1,2,2-Tetrachloroethane 0.020 U 127-18-4-----Tetrachloroethene 0.020 U 108-88-3-----Toluene 0.020 U 87-61-6----1,2,3-Trichlorobenzene 0.25 U 120-82-1-----1,2,4-Trichlorobenzene 0.050 U 71-55-6-----1,1,1-Trichloroethane 0.020 U 79-00-5-----1,1,2-Trichloroethane 0.020 U 79-01-6-----Trichloroethene 0.020 U 75-69-4----Trichlorofluoromethane 0.050 U 96-18-4-----1,2,3-Trichloropropane 0.020 U 95-63-6-----1,2,4-Trimethylbenzene 0.020 U 108-67-8-----1,3,5-Trimethylbenzene 0.020 U 75-01-4-----Vinyl chloride 0.10 U 108-38-3----m/p-Xylene 0.040 U 95-47-6----o-Xylene 0.020 U

ORGANIC LABORATORY QUALIFIERS

- U Indicates compound was analyzed for but not detected. The sample quantitation limit is reported.
- J Indicates an estimated value, below the quantitation limit, but above the method detection limit.
- N Indicates presumptive evidence of a compound.
- B This flag is used when the analyte is found in the associated blank as well as in the sample.
- E This flag identifies compounds whose concentrations exceed the calibration range of the instrument for that specific analysis.
- P This flag is used with a target analyte when there is greater than a 25% difference between the results obtained from the primary and confirmation columns for dual column analysis methods. (ie, pesticides, triazines, PCB's, etc). The reported value is the average of the two results.
- Q This flag identifies the average of multiple results from multiple analysis, or the average of the averages of dual column analysis methods.
- (Underline) The compound is present at the amount reported.
 No flag.
- X Non-target analytes co-elute with compound. Identification unable to be confirmed.

97000804

LAB Use Only

-	•	- ·i	Data Received 3/12/97
	<u> </u>	•	Matrix Code
ESTABLISHMENT Phila Coke Co	1997 CME	FACILITY YW	COLL NUMBER
Phila Phila	GRANT CODE COLL N	IAME/PHONE NUMBER	TYPE TR STD ANALYSIS
CARD (3) ED CODE (ALL CARDS) 4-16	LATITUDE 4-10	ANIACHAM 610-832	ATE 19-24 TIME 25-8 KIND 29
Cnty Mun T Est Case	Fac.	M	ATE 19-24 TIME 25-8 KIND 29 -
2 USGS -Q 30-34 BUREAU 35-37 AMIS SAN	IPLE NUMBER 38-43	0 1 0 2 TREAM NAME 44-57	11971195
1 1 3 0 0 2	114/14217		RELATIVE POINT 58
FULL DESCRIPTION WHERE SAMPLE TAKEN: CUSTODY LOG			REQUESTED LAB ANALYSES
How Shipped U.S. Core Date 2//	FIXE	d w/ HC/	VOA
Legal Seal No. B/2086			
Received by:			
Legal Seal Condition: Leuter Legal Seal Condition:	i	TATIVE REPORT	
	DO NOT WR	RITE BELOW THIS LINE	200
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See ATTACKE	SHEE	15(3)	Par Rep
	15 1 10		(Q)
	QUANTITATI	VE RESULTS	
ANALYSIS:	UNITS:	ANALYSIS CODE	RESULTS (SHOW DECIMAL PORITS ON LINES)
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III ABINIT BEGGETTE IN ACCUSE	1	Wh	edan 2/20/97
HLORINE PRESENT IN SAMPLE YESNO	ANALYST COLOR	SIGNATURE	10/9/
U// •// /1		•	/ /

1ADL VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

	MULTIPLE DILUTION RESULTS	1
Lab Name:	Contract:	2141427DL

Lab Code: Case No.: SAS No.: SDG No.: 970211HP5972A Matrix: (soil/water) WATER Lab Sample ID: 97000804 Sample wt/vol: 25.00 (g/mL) ML Lab File ID: 970804DL Level: (low/med) LOW Date Received: % Moisture: ____ decanted: (Y/N)___ Date Extracted:02/13/97 Concentrated Extract Volume: ____(uL) Date Analyzed: 02/13/97 Injection Volume: ____(uL) Dilution Factor: 1.0 pH: 7/2 / 2,0 GPC Cleanup: (Y/N) N CONCENTRATION UNITS: CAS NO COMPOINT

CAS NO.	COMPOUND (ug/L or ug	/Kg) UG/L	Q
67-64-1	Acetone	1.0	U
71-43-2	Benzene	38	١
108-86-1	Bromobenzene	0.020	TT
74-97-5	Bromochloromethane	0.020	
75-27-4	Bromodichloromethane	0.10	
75-25-2	Bromoform	0.020	
	Bromomethane	0.050	
78-93-3	2-Butanone	1.0	Ū
	n-Butylbenzene		_
56-23-5	Carbon tetrachloride	0.020	
108-90-7	Chlorobenzene	0.062	, -
	Chloroethane	0.020	U
	Chloroform	1.0	Ū
74-87-3	Chloromethane	0.020	U
95-49-8	O-Chlorotoluene	0.020	Ū
106-43-4	P-Chlorotolulene	0.020	Ū
124-48-1	Dibromochloromethane	0.020	ַ ט
96-12-8	1,2-Dibromo-3-chloropropane	0.020	U
106-93-4	1,2-Dibromoethane	0.020	U
	Dibromomethane	0.020	U
	1,2-Dichlorobenzene	0.020	U
541-73-1	1,3-Dichlorobenzene	0.020	U
106-46-7	1,4-Dichlorobenzene	0.033	
75-71-8	Dichlorodifluoromethane	0.050	Ū
	1,1-Dichloroethane	0.30	Q
107-06-2	1,2-Dichloroethane	0.020	U
75-35-4	1,1-Dichloroethene	0.020	U
156-59-2	cis-1,2-Dichloroethene	0.12	
156-60-5	trans-1,2-Dichloroethene	0.020	<u>י</u>
	Dichloromethane	0.020	U
78-87-5	1,2-Dichloropropane	0.020	U
142-28-9	1,3-Dichloropropane	0.020	Ŭ
594-20-7	2,2-Dichloropropane	0.020	U
l	<u>.</u>	1	

1ADL

VOLATILE ORGANICS ANALYSIS DATA SHEET
MULTIPLE DILUTION RESULTS

EPA SAMPLE NC.

3	DILUTION	RESULTS		
			2141427DL	
		Contract.		

Lab Name:	Contract	!
Lab Code:	Case No.: SAS No.	: SDG No.: 970211HP5972
Matrix: (soil/water)	WATER	Lab Sample ID: 97000804
Sample wt/vol:	25.00 (g/mL) ML	Lab File ID: 970804DL
Level: (low/med)	LOW	Date Received:
% Moisture:	decanted: (Y/N)	Date Extracted:02/13/97
Concentrated Extract	Volume:(uL)	Date Analyzed: 02/13/97
Injection Volume:		Dilution Factor: 1.0
GPC Cleanup: (Y/N)	N pH: 7%	210
	CONCE	NTRATION UNITS:

COMPOUND (uq/L or ug/Kg) UG/L Q CAS NO. 0.020 U 563-58-6-----1,1-Dichloropropene 10061-01-5----cis-1,3-Dichloropropene_ 0.020 U 0.020 U 10061-02-6----trans-1,3-Dichloropropene 0.020 U 98-06-6-----1,1-Dimethylethylbenzene_ 0.80|Q100-41-4-----Ethylbenzene 0.050 | Ū 87-68-3------Hexachlorobutadiene 591-78-6-----2-Hexanone 1.1 0.48 Q 99-87-6-----4-Isopropyltoluene 1634-04-4----2-Methoxy-2-methylpropane 0.10 $1.2\,\overline{Q}$ 98-82-8----1-Methylethylbenzene 0.20 U 108-10-1-----4-Methyl-2-pentanone 0.020 U 135-98-8-----1-Methylpropylbenzene 91-20-3-----Napthalene 49 0.12 103-65-1----n-Propylbenzene 0.080 100-42-5-----Styrene 630-20-6-----1,1,1,2-Tetrachloroethane 0.020 JU 0.020 U 79-34-5----1,1,2,2-Tetrachloroethane_ 0.052 127-18-4-----Tetrachloroethene 0.48 Q 108-88-3-----Toluene 0.25 Ü 87-61-6-----1,2,3-Trichlorobenzene 0.050 U 120-82-1-----1,2,4-Trichlorobenzene_ 71-55-6-----1,1,1-Trichloroethane_ 0.020 U 0.020 U 79-00-5----1,1,2-Trichloroethane 0.072 79-01-6-----Trichloroethene 0.050 \U 75-69-4-----Trichlorofluoromethane 0.020 U 96-18-4-----1,2,3-Trichloropropane_ 0.38 | Q95-63-6-----1,2,4-Trimethylbenzene 0.18|Q108-67-8-----1,3,5-Trimethylbenzene_ 0.10 U 75-01-4-----Vinyl chloride 0.49|Q108-38-3-----m/p-Xylene_ 0.25 | Q95-47-6----o-Xylene

ORGANIC LABORATORY QUALIFIERS

- U Indicates compound was analyzed for but not detected. The sample quantitation limit is reported.
 - J Indicates an estimated value, below the quantitation limit, but above the method detection limit.
 - N Indicates presumptive evidence of a compound.
 - B This flag is used when the analyte is found in the associated blank as well as in the sample.
 - E This flag identifies compounds whose concentrations exceed the calibration range of the instrument for that specific analysis.
 - P This flag is used with a target analyte when there is greater than a 25% difference between the results obtained from the primary and confirmation columns for dual column analysis methods. (ie, pesticides, triazines, PCB's, etc). The reported value is the average of the two results.
 - Q This flag identifies the average of multiple results from multiple analysis, or the average of the averages of dual column analysis methods.
 - (Underline) The compound is present at the amount reported.
 No flag.
 - X Non-target analytes co-elute with compound. Identification unable to be confirmed.

97000803

LAB Use Only

			Date Received 2/12/97
	''	· .	Matrix Code /
Phi4 Coke Co	1997 CMC	FACILITY	COLL NUMBER
COUNTY Phila MUNICIPALITY Phila	GRANT CODE COLL	NAME/PHONE NUMBER	1-11-1
CARD (3) ID CODE (ALL CARDS) 4-16	LATITUDE 4-10	UNAINGLESS CIO-832-	1165 ICE VOA
Cnty Mun T Est Case	Fac		TE 19-24 TIME 25-8 KIND 29 D Y Hr Min
	SAMPLE NUMBER 38-43	0 1 02	11971030
1 1 1 1 2 2 2 1	21/4/14/25	STREAM NAME 44-57	RELATIVE POINT S
FULL DESCRIPTION WHERE SAMPLE TAKEN:			REQUESTED LAB ANALYSES
How Shipped U.S. Corco Date 2/1/	Fixed	w/ HA	
Legal Seal No. B120 \$2		7 1101	VOR
Received by:	-		
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	QUANTITATI	VE RESULTS	
ANALYSIS:	UNITS:	ANALYSIS CODE	RESULTS
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HLORINE PRESENT IN SAMPLE	ANALYST /	W/M marie	2/20/97
YES X NO	To the same of the	SIGNATURE	SOATE OV O V I V

1ADL VOLATILE ORGANICS ANALYSIS DATA SHEET MULTIPLE DILUTION RESULTS

EPA SAMPLE NC.

Lab Name:	Co	ntract:	2141425
Lab Code:	Case No.: S.	AS No.:	SDG No.: 970211HP5972
Matrix: (soil/water)	WATER	Lab Sample	ID: 97000803
Sample wt/vol:	25.00 (g/mL) ML	Lab File I	D: 970803
Level: (low/med)	LOW	Date Recei	ved:
% Moisture:	decanted: (Y/N)	Date Extra	cted:02/12/97
Concentrated Extract	Volume:(uL	Date Analy:	zed: 02/12/97
Injection Volume:	(uL)	Dilution Fa	actor: 1.0
GPC Cleanup: (Y/N)	N pH: 7	フムル	
CAS NO.	COMPOUND	CONCENTRATION UNI	

67-64-1	Acetone	1.0	ΤΤ
71-43-2		0.020	1 -
108-86-1	Bromobenzene	0.020	1
74-97-5	Bromochloromethane	0.020	,
75-27-4	Bromodichloromethane	0.10	
75-25-2	Bromoform	0.020	
74-83-9	Bromomethane	0.050	
	2-Butanone	1.0	_
	n-Butylbenzene	0.020	U
56-23-5	Carbon tetrachloride	0.020	
108-90-7	Chlorobenzene	0.020	U
	Chloroethane	0.020	U
	Chloroform	1.0	U
74-87-3	Chloromethane	0.020	U
95-49-8	O-Chlorotoluene	0.020	U
106-43-4	P-Chlorotolulene	0.020	U
124-48-1	Dibromochloromethane	0.020	U
96-12-8	1,2-Dibromo-3-chloropropane	0.020	U
106-93-4	1,2-Dibromoethane	0.020	U
74-95-3	Dibromomethane	0.020	U
95-50-1	1,2-Dichlorobenzene	0.020	U
541-73-1	1,3-Dichlorobenzene	0.020	U
106-46-7	1,4-Dichlorobenzene	0.020	U
	Dichlorodifluoromethane	0.054	l
	1,1-Dichloroethane	0.020	Ū
107-06-2	1,2-Dichloroethane	0.020	U
75-35-4	1,1-Dichloroethene	0.020	U
156-59-2	cis-1,2-Dichloroethene	0.020	ט
156-60-5	trans-1,2-Dichloroethene	0.020	U
75-09-2	Dichloromethane	0.020	U
78-87-5	1,2-Dichloropropane	0.013	J
142-28-9	1,3-Dichloropropane	0.020	U
594-20-7	2,2-Dichloropropane	0.020	ľŪ

VOLATILE ORGANICS ANALYSIS DATA SHEET

135-98-8----1-Methylpropylbenzene

100-42-5-----Styrene 630-20-6-----1,1,1,2-Tetrachloroethane

79-34-5----1,1,2,2-Tetrachloroethane

87-61-6----1,2,3-Trichlorobenzene

120-82-1----1,2,4-Trichlorobenzene

71-55-6-----1,1,1-Trichloroethane

79-00-5-----1,1,2-Trichloroethane

75-69-4-----Trichlorofluoromethane

96-18-4----1,2,3-Trichloropropane

95-63-6----1,2,4-Trimethylbenzene

108-67-8-----1,3,5-Trimethylbenzene

91-20-3-----Napthalene

108-88-3-----Toluene

103-65-1----n-Propylbenzene

127-18-4-----Tetrachloroethene

79-01-6-----Trichloroethene

75-01-4------Vinyl chloride

108-38-3----m/p-Xylene

95-47-6-----ó-Xylene

EPA SAMPLE NO.

0.020 U

0.020 U

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0.050 U

0.020 U

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0.050 U

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0.020

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0.10

0.044

1.0 U

MO	TITATE DIPOLION K	ESULIS	
Lab Name:	•	Contract:	2141425
Lab Code:	Case No.:	SAS No.: SD	G No.: 970211HP5972A
Matrix: (soil/water)	WATER	Lab Sample I	D: 97000803
Sample wt/vol:	25.00 (g/mL) ML	Lab File ID:	970803
Level: (low/med)	LOW	Date Receive	d:
% Moisture:	decanted: (Y/N)_	Date Extract	ed:02/12/97
Concentrated Extract	Volume:(uL) Date Analyze	d: 02/12/97
Injection Volume:	(uL) N pH: 7	Dilution Fac	tor: 1.0
CAS NO.		CONCENTRATION UNIT (ug/L or ug/Kg) UG	
10061-01-5 10061-02-6 98-06-6 100-41-4 87-68-3 591-78-6 99-87-6 1634-04-4 98-82-8	1,1-Dichloropr cis-1,3-Dichlo trans-1,3-Dich 1,1-Dimethylet Ethylbenzene Hexachlorobuta 2-Hexanone 4-Isopropyltol 2-Methoxy-2-me 1-Methylethylb	ropropene loropropene hylbenzene diene uene thylpropane enzene	0.020 U 0.020 U 0.020 U 0.020 U 0.020 U 0.050 U 0.020 U 0.020 U 0.050 U

ORGANIC LABORATORY QUALIFIE

- U Indicates compound was analyzed for but not detected. The sample quantitation limit is reported.
- J Indicates an estimated value, below the quantitation limit, but above the method detection limit.
- N Indicates presumptive evidence of a compound.
- B This flag is used when the analyte is found in the associated blank as well as in the sample.
- E This flag identifies compounds whose concentrations exceed the calibration range of the instrument for that specific analysis.
- P This flag is used with a target analyte when there is greater than a 25% difference between the results obtained from the primary and confirmation columns for dual column analysis methods. (ie, pesticides, triazines, PCB's, etc). The reported value is the average of the two results.
- Q This flag identifies the average of multiple results from multiple analysis, or the average of the averages of dual column analysis methods.
- ____ (Underline) The compound is present at the amount reported.

 No flag.
- X Non-target analytes co-elute with compound. Identification unable to be confirmed.

97000806

I ah Number

		Detu	Rec. 803 2/12/97
			x Code
Phila Cohe Co CASI	1997 CME	FACILITY MW-4R	COLL NUMBER
COUNTY Phila MUNICIPALITY Phila			
CARD (3) ID CODE (ALL CARDS) 4-16	LATITUDE 4-10	Cham GIB 832-GID LONGITUDE 11-18 DATE 19-2	1 TIME 25-8 KIND 29
2 1 1 1 1 1 1 1	ac	ا مند ا من ا من ا	Y Hr Min 97/04/5
	LE NUMBER 38-43 STREAM !	NAME 44-57	RELATIVE POINT SE
FULL DESCRIPTION WHERE SAMPLE TAKEN:			REQUESTED LAB ANALYSES
CUSTODY LOG	Fixed	1 4/11	
How Shipped U.S. COPS 0 Date 2///	FIXED	4/-1/6/	VOA
Received by:		<u>/</u>	
Legal Seal Condition:	QUALITATIV	VE REPORT	25325
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	QUANTITATIVE R	ECH TC	
	QUANTITATIVE N	ESOLIS	RESULTS
ANALYSIS:	UNITS:	ANALYSIS CODE	(SHOW DECIMAL POINTS ON LINES)
	1		
	<u> </u>		
			
	**		
HLORINE PRESENT IN SAMPLE	ANALYST G BALL	muride	2/20/97
YES NO	SIGNA		DATE

1ADL VOLATILE ORGANICS ANALYSIS DATA SHEET MULTIPLE DILUTION RESULTS

EPA SAMPLE NO.

Lab Name:	Contr	act:	2141431
Lab Code:	Case No.: SAS	No.: SDG	No.: 970211HP5972A
Matrix: (soil/water)	WATER	Lab Sample ID	: 97000806
Sample wt/vol:	25.00 (g/mL) ML	Lab File ID:	970806
Level: (low/med)	LOW	Date Received:	
% Moisture:	decanted: (Y/N)	Date Extracted	1:02/12/97
Concentrated Extract	Volume:(uL)	Date Analyzed:	02/12/97
Injection Volume:		Dilution Facto	or: 1.0
GPC Cleanup: (Y/N)	N pH: 7	U Q 100	
CAS NO.		NCENTRATION UNITS: g/L or ug/Kg) UG/I	

CAS NO.	COMPOUND (ug/L or ug	g/kg) UG/L	Q
67-64-1	Acetone	3.0	
71-43-2	Benzene	0.020	
108-86-1	Bromobenzene	0.020	
74-97-5	Bromochloromethane	0.020	
75-27-4	Bromodichloromethane	0.10	
75-25-2	Bromoform	0.020	
74-83-9	Bromomethane	0.050	
78-93-3 	2-Butanone	1.4	
104-51-8	n-Butylbenzene	0.020	TT
56-23-5	Carbon tetrachloride	0.020	
108-90-7	Chlorobenzene	0.020	
75-00-3	Chloroethane	0.020	
67-66-3	Chloroform	1.0	
74-87-3	Chloromethane	0.020	
95-49-8	O-Chlorotoluene	0.020	
106-43-4	P-Chlorotolulene	0.020	
124-48-1	Dibromochloromethane	0.020	
96-12-8	1,2-Dibromo-3-chloropropane	0.020	
106-93-4	1,2-Dibromoethane	0.020	
74-95-3	Dibromomethane	- (
95-50-1	1,2-Dichlorobenzene	0.020	
541-73-1	1,3-Dichlorobenzene	0.020	Ū
106-46-7	1,4-Dichlorobenzene	0.020	Ü
75-71-8	Dichlorodifluoromethane	0.050	_
75-34-3	1,1-Dichloroethane	0.020	
107-06-2	1,2-Dichloroethane	0.020	Ū
75-35-4	1,1-Dichloroethene	0.020	Ŭ
156-59-2	cis-1,2-Dichloroethene	0.020	Ŭ
156-60-5	trans-1,2-Dichloroethene	0.020	Ū
75-09-2	Dichloromethane	0.020	ŭ
78-87-5	1,2-Dichloropropane	0.020	Ŭ
142-28-9	1,3-Dichloropropane	0.020	Ü
594-20-7	2,2-Dichloropropane	0.020	U
	-, - bromrotopropuno	- 0.020	J
		- i	

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

0.050 U

0.020 U 0.020 U 0.020 U

0.050 U

0.020 U 0.020 U

0.020 0

0.040 U 0.020 U

0.10 U

MULTIPLE DILUTION RESULTS 2141431 Lab Name: Contract: Case No.: SAS No.: Lab Code: SDG No.: 970211HP5972A Matrix: (soil/water) WATER Lab Sample ID: 97000806 Sample wt/vol: 25.00 (g/mL) ML Lab File ID: 970806 Level: (low/med) LOW Date Received: % Moisture: decanted: (Y/N) Date Extracted:02/12/97 Concentrated Extract Volume:____(uL) Date Analyzed: 02/12/97 Injection Volume: (uL) Dilution Factor: 1.0 CONCENTRATION UNITS: CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q 563-58-6----1,1-Dichloropropene 0.020 U 10061-01-5----cis-1,3-Dichloropropene_ 0.020 U 10061-02-6----trans-1,3-Dichloropropene____ 0.020 U 98-06-6----1,1-Dimethylethylbenzene____ 0.020 U 100-41-4----Ethylbenzene 0.020 U 87-68-3-----Hexachlorobutadiene 0.050 U 591-78-6----2-Hexanone 1.4 99-87-6----4-Isopropyltoluene 0.020 ប៊ 1634-04-4----2-Methoxy-2-methylpropane____ 0.047 J 98-82-8-----1-Methylethylbenzene 108-10-1----4-Methyl-2-pentanone 0.020 U 0.038|J 135-98-8----1-Methylpropylbenzene____ 0.020 U 91-20-3-----Napthalene 1.0 U 0.020 U 103-65-1----n-Propylbenzene 100-42-5-----Styrene 0.020 U 630-20-6-----1,1,1,2-Tetrachloroethane 0.020 U 79-34-5----1,1,2,2-Tetrachloroethane 0.020 U 127-18-4-----Tetrachloroethene 0.020 U 108-88-3-----Toluene 0.033 87-61-6----1,2,3-Trichlorobenzene 0.25 U

120-82-1----1,2,4-Trichlorobenzene

71-55-6-----1,1,1-Trichloroethane_____

75-69-4----Trichlorofluoromethane

79-01-6-----Trichloroethene

79-00-5----1,1,2-Trichloroethane

96-18-4-----1,2,3-Trichloropropane 95-63-6----1,2,4-Trimethylbenzene

108-67-8-----1,3,5-Trimethylbenzene____

75-01-4-----Vinyl chloride

ORGANIC LABORATORY QUALIFIERS

- U Indicates compound was analyzed for but not detected. The sample quantitation limit is reported.
- J Indicates an estimated value, below the quantitation limit, but above the method detection limit.
- N Indicates presumptive evidence of a compound.
- B This flag is used when the analyte is found in the associated blank as well as in the sample.
- E This flag identifies compounds whose concentrations exceed the calibration range of the instrument for that specific analysis.
- P This flag is used with a target analyte when there is greater than a 25% difference between the results obtained from the primary and confirmation columns for dual column analysis methods. (ie, pesticides, triazines, PCB's, etc). The reported value is the average of the two results.
- Q This flag identifies the average of multiple results from multiple analysis, or the average of the averages of dual column analysis methods.
- ____ (Underline) The compound is present at the amount reported.

 No flag.
- X Non-target analytes co-elute with compound. Identification unable to be confirmed.

COMMONWEALTH OF PENESYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION SUREAU OF LABORATORIES

100

SPECIAL-ANALYSES REPORT

LAB Use Only 97000807

PORT Date Received 2/12/97

Matrix Code ESTABLISHMENT CASE FACILITY Phila Coke Co COLL NUMBER COLL NAME/PHONE NUMBER TYPE TR KE D USGS -Q 30-34 **QUALITATIVE REPORT** DO NOT WRITE BELOW THIS LINE the state of the state of na kata da kat 130 41 -**QUANTITATIVE RESULTS** RESULTS ANALYSIS: AMALYSIS CODE Mt PORTS ON LINES)

1ADL VOLATILE ORGANICS ANALYSIS DATA SHEET MULTIPLE DILUTION RESULTS

EPA SAMPLE NO.

		250215	•		1
ab Name:	•	Contract:		21414331)L
Lab Code:	Case No.:	SAS No.:	SDG No.	970211	
Matrix: (soil/water)) WATER	Lab S	ample ID: 97	000807	
Sample wt/vol:					
Level: (low/med)			Received:		
% Moisture:	decanted: (Y/N)		 -		
Concentrated Extract	··				-24
Injection Volume:			ion Factor: 1		
GPC Cleanup: (Y/N)	N pH: 7.X	1/2 2/	9	u	
	COMPOUND	CONCENTRATIO	אר דואודים.	Q	,
67-64-1	Acetone		2		1
71-43-2	Benzene		2. 0.04		.]
108-86-1	Bromobenzene		0.04		.]
74-97-5	Bromochloromet	nane	0.02		1
75-27-4	Bromodichlorome	thane		οÜ	1
75-25-2	Bromoform		0.02		1
74-83-9	Bromomethane		0.05		
78-93-3	2-Butanone			0 U	
104-51-8	n-Butylbenzene		0.02		ŀ
56-23-5	Carbon tetrachl	oride	0.02		ļ
1 108-90-7	Chlorobenzene		0.02		
75-00-3	Chloroethane_		0.02		
67-66-3	Chloroform			0 U	
74-87-3	Chloromethane		0.02		
95-49-8	O-Chlorotoluene		0.02		
106-43-4	P-Chlorotoluler	ie	0.02		Í
124-48-1	Dibromochlorome	thane	0.02	סוס	
96-12-8	1,2-Dibromo-3-c	hloropropane_	0.02	0 U	
106-93-4	1,2-Dibromoetha	.ne	0.02	0 U	
74-95-3	Dibromomethane		0.02	០ ប	ł
95-50-1	1,2-Dichloroben	zene	0.02	0 U	
541-73-1	1,3-Dichloroben	zene	0.02	0 U	İ
75 71 0	1,4-Dichloroben	zene	. 0.02	סוס	
75-71-8	Dichlorodifluor	omethane	0.05	ַ ען פ	
15-34-3	1,1-Dichloroeth	ane	0.02	ט ט	•
10/-06-2	1,2-Dichloroeth	ane	0.02		1
156.50 0	1,1-Dichloroeth	ene	0.06		
156-50 5	cis-1,2-Dichlor	oethene	3:		
75_00 2	trans-1,2-Dichl Dichloromethane	oroethene	0.5		
79-07-5	DICUTOLOMETUSUE		0.02		
142-29-0	1,2-Dichloropro	pane	0.02		İ
594-20-7	1,3-Dichloropro	pane	0.02		
334-20-7	2,2-bicatoropro	pane	0.02	ן טוכ	}

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET MULTIPLE DILUTION RESULTS

140	DITEDE DIDÚTION	RESULTS	i		
Lab Name:	· .	Contract:		2141433DL	
Lab Code:	Case No.:	SAS No.:	SDG	No.: 970211HI	 25972A
<pre>Matrix: (soil/water)</pre>			Sample ID:		•
Sample wt/vol:	25.00 (g/mL) M				
Level: (low/med)	LOW	Date	Received:		
% Moisture:	decanted: (Y/N) Date	Extracted	:02/13/97	
Concentrated Extract			Analyzed:		
Injection Volume: GPC Cleanup: (Y/N) CAS NO.	· ; ;		ON UNITS:	r: 1.0 0	
10061-01-5 10061-02-6 98-06-6 100-41-4 87-68-3 591-78-6 99-87-6 1634-04-4 98-82-8	4-Isopropylto 2-Methoxy-2-m 1-Methylethyl 4-Methyl-2-pe	propene loropropene chloropropene ethylbenzene cadiene cluene methylpropane		0.020 U 0.020 U 0.020 U 0.020 U 0.019 J 0.050 U 0.20 U 0.020 U 0.15	

OR ANIC LABORATORY QUALIFIERS

- U Indicates compound was analyzed for but not detected. The sample quantitation limit is reported.
- J Indicates an estimated value, below the quantitation limit, but above the method detection limit.
- N Indicates presumptive evidence of a compound.

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- B This flag is used when the analyte is found in the associated blank as well as in the sample.
- E This flag identifies compounds whose concentrations exceed the calibration range of the instrument for that specific analysis.
- P This flag is used with a target analyte when there is greater than a 25% difference between the results obtained from the primary and confirmation columns for dual column analysis methods. (ie, pesticides, triazines, PCB's, etc). The reported value is the average of the two results.
- Q This flag identifies the average of multiple results from multiple analysis, or the average of the averages of dual column analysis methods.
 - (Underline) The compound is present at the amount reported.

 No flag.
- X Non-target analytes co-elute with compound. Identification unable to be confirmed.

1980-FM-LABOC13.1 6/85

97000808

DOS USE ORBY		
Lab Humber		

				Matrix Cod	9/9/
Phila Coke	CASE	1997 CME	FACILITY		COLL NUMBER
Phika Phika	AUNICIPALITY Phila	·	ME/PHONE NUMBER	W-6	Z/4/ TYPE TR STD ANALYSE
CARD (3) ID CODE (ALL (ARDS) 4-16	BAMM COM	ME/PHONE NUMBER LONGITUDE 11-18		
	T Est Case Fac.	f		DATE 19-24 M D Y	TIME 25-8 KBID 29
		JMBER 38-43 STR	EAM NAME 44-57	02119	RELATIVE POINT S
ML DECORION WHEE CANCES	0024	41435			
CUSTODY LOG					REGUESTED LAS ANALYSES
continue V.S. C. 4.90 scale Seal Seal Seal Seal Seal Seal Seal S					208
regal Seel Condition:			A T-01 (T D-00)	. <u>J</u>	
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are and A		QUANTITATIV	E RESULTS	19 miles	
GALYSIS:		UNITS:	ANALTER	PER CONSTRUCTION	RESULTS PHOW DECIMAL POINTS, QIP LINES)
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1ADL VOLATILE ORGANICS ANALYSIS DATA SHEET MULTIPLE DILUTION RESULTS

Lab Name:		Contract:		2141435DL	
Lab Code:	Case No.:	SAS No.:	SDG	No.: 970211HP597	/2A
Matrix: (soil/water)	WATER	:	Lab Sample ID:	97000808	
Sample wt/vol:	25.00 (g/mL) ML		Lab File ID:	970808DL	•
Level: (low/med)	LOW	. 1	Date Received:		
% Moisture:	decanted: (Y/N)_	1	Date Extracted	:02/13/97	
Concentrated Extract	Volume:	uL) 1	Date Analyzed:	02/13/97	
Injection Volume:	(uL)		Dilution Fa cto	r: 1.0	
GPC Cleanup: (Y/N)	N pH: 7	My !	2 10		
CAS NO.	COMPOUND	_	FRATION UNITS: or ug/Kg) UG/L	Q	
67-64-1	Acetone		·	1.0 U	

az no.	(ug/h Of ug	/kg/ 0G/L	Q
- Same or Ada		 	
67-64-1	Acetone	1.0	177
	Benzene	7.6	L _
108-86-1	Bromobenzene	0.020	Q U
74-97-5	Bromochloromethane	0.020	
75-27-4	Bromodichloromethane	0.10	
75-25-2	Bromoform	0.020	
	Bromomethane	0.050	_
78-93-3	2-Butanone	1.0	_
	n-Butylbenzene	0.020	
56-23-5	Carbon tetrachloride	0.020	
108-90-7	Chlorobenzene	0.020	
75-00-3	Chloroethane	0.020	
67-66-3	Chloroform	1.0	
74-87-3	Chloromethane	0.020	
95-49-8	O-Chlorotoluene	0.020	
106-43-4	P-Chlorotolulene	0.020	
124-48-1	Dibromochloromethane	0.020	
96-12-8	1,2-Dibromo-3-chloropropane	0.020	
106-93-4	1,2-Dibromoethane	0.020	
74-95-3	Dibromomethane	0.020	
	1,2-Dichlorobenzene	0.020	
541-73-1	1,3-Dichlorobenzene	0.020	
106-46-7	1,4-Dichlorobenzene	0.020	
75-71-8	Dichlorodifluoromethane	0.020	ΰ
75-34-3	Dichlorodifluoromethane	0.020	Ŭ
107-06-2	1,2-Dichloroethane	0.020	
75-35-4	1,1-Dichloroethene	0.020	_
156-59-2	cis-1,2-Dichloroethene	0.020	
156-60-5	trans-1,2-Dichloroethene	0.020	
75-09-2	Dichloromethane	0.020	lττ
78-87-5	1,2-Dichloropropane	0.020	l u
142-28-9	1,3-Dichloropropane	0.020	
594-20-7	2,2-Dichloropropane	0.020	
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VOLATILE ORGANICS ANALYSIS DATA SHEET
MULTIPLE DILUTION RESULTS

EPA SAMPLE NO.

	ODITEDE DIDOLION	REBUELLS		0.1		[
.ಎಂ Name:		Contract:		214	17435DL	_
Lab Code:	Case No.:	SAS No.:	SDG	No.: 9	970211HP	5972A
Matrix: (soil/water) WATER	Lab	Sample ID:	97000	808	
Sample wt/vol:	25.00 (g/mL) ML	Lab	File ID:	97080	8DL	
Level: (low/med)	rom	Date	Received:			
% Moisture:	decanted: (Y/N)	Date	Extracted	:02/13	3/97	
Concentrated Extrac	t Volume:	(uL) Date	Analyzed:	02/13	3/97	
Injection Volume: _	(uL)	Dilu	tion Facto	r: 1.0)	
Injection Volume: _ GPC Cleanup: (Y/N	I) N pH: 7	(Ma,	0		-	
•	COMPOUND	CONCENTRAT	ION UNITS:		Q	
10061-01-5 10061-02-6 98-06-6 100-41-4 87-68-3 591-78-6 1634-04-4 98-82-8 108-10-1 135-98-8 103-65-1 100-42-5 100-42-5 127-18-4 128-88-3 120-82-1 79-01-6 79-01-6 75-69-4 96-18-4 95-63-6 108-38-3	1,1-Dichloropcis-1,3-Dichltrans-1,3-Dic1,1-DimethyleEthylbenzeneHexachlorobut2-Hexanone4-Isopropylto2-Methoxy-2-methylethyl4-Methyl-2-pe1-MethylpropyNapthalenePropylbenze1,1,2-Tetra1,1,2-Tetra1,1,2-Tetra1,2,3-Trichlo1,2,4-Trichlo1,1,1-Trichlo1,1,2-Trichlo1,2,3-Trichlo1,2,4-TrimethTrichlorofluo1,2,4-Trimeth1,3,5-Trimeth1,3,5-Trimeth	oropropene chloropropene chylbenzene cluene cluene cluene chylpropane chenzene chloroethane chloroethane chene crobenzene crobenzene crobenzene crobenzene crobenzene cropropane chene cropropane cropropane chylbenzene crylbenzene chylbenzene		0.020 0.020 0.020 0.020 0.050 0.050 0.065 0.020		

ORGANIC LABORATORY QUALIFIERS

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